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TRADE NAME	MODEL	FOLDER NO.
Airline	74WG-1056A	4719-1
Arvin	664, 664A (RE-206-1), 6640 (Ch. RE-206-2)	4719-2
Bendix	526MA, 526MB, 526MC	4719-3
Bendix	1217, 1217B, 1217D	4719-4
Brunswick	T-4000 "Buckingham," T-4000½ "Buckingham," D-6876 "Plymouth"	4719-5
Capitol	U-24	4719-6
Delco	R-1236, R-1237	4719-7
Firestone (Air Chief)	4-B-6 (Code 177-7-PM18)	4719-8
Garod	4A-1, 4A-2	4719-9
Garod	62B	4719-10
General Television	26B5	4719-11
Knight	11C-300	4719-12
Majestic	7YR752 (Ch. 7B04A)	4719-13
Majestic	8FM775 (Ch. 8B08D), 8FM776 (8B07D)	4719-14

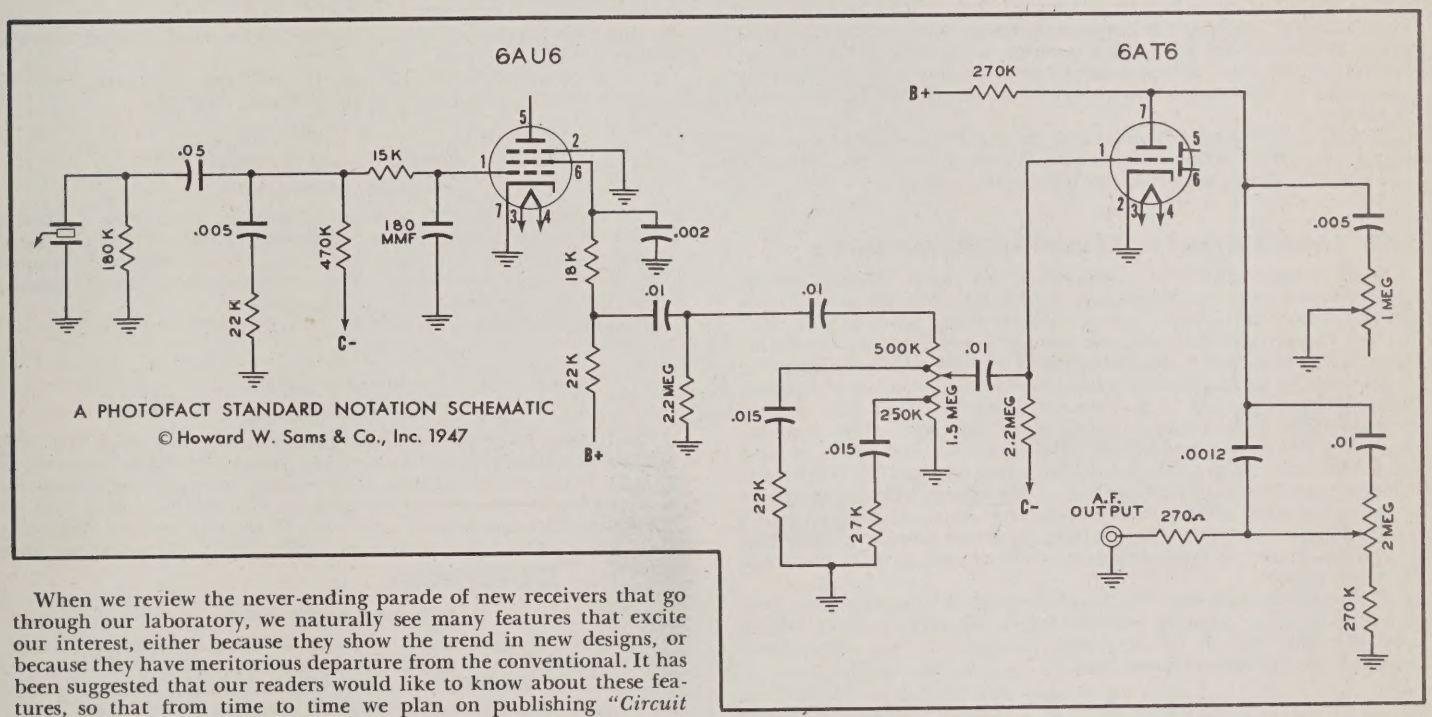
TRADE NAME	MODEL	FOLDER NO.
Monitor	M-3070	4719-15
Motorola	5A7 (Ch. HS-62), 5A7A (Ch. HS-62A)	4719-16
Motorola	47B11 (Ch. HS-72)	4719-17
Motorola	75F31 (Ch. HS-36), 75F31A, 75F31B (Ch. HS-36A), 76F31 (HS-98)	4719-18
Olympic	7-724	4719-19
Philco	46-1201 (Revised)	4719-21
Philco	48-1200	4719-20
Sentinel	293-CT, IU-293-CT	4719-22
Silvertone	6106A (Ch. 101.662-4E), 6111A (Ch. 101.662-5F)	4719-23
Silvertone	7025 (Ch. 132.807-2)	4719-24
Sparton	1005, 1006, 1007, 1008 (Ch. 8-57)	4719-25
Stewart-Warner	A92CR3, A92CR3S (Ch. 9028-C); A92CR6, A92CR6S (Ch. 9028-F)	4719-26
Temple	G-518	4719-27
Webster	Record Changer 70	4719-28

The PHOTOFACT Servicer

NOVEMBER 25, 1947 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ VOL. 3, No. 29

ROBERT M. ELLIS, *Editor*

THE R.C.A. CRESTWOOD



When we review the never-ending parade of new receivers that go through our laboratory, we naturally see many features that excite our interest, either because they show the trend in new designs, or because they have meritorious departure from the conventional. It has been suggested that our readers would like to know about these features, so that from time to time we plan on publishing *"Circuit Reviews"* in the SERVICER.

The audio circuit of the R.C.A. Crestwood, Models 612V1, 612V2, 612V3 (Chassis RK-121 and RS-123), has a number of unique circuit features, that will be of interest to service technicians, especially those who are record fans, or who operate sound equipment. The following description of the audio system is our own, and does not necessarily represent the views of the manufacturer. In the limited space available, it is not possible to cover the design of the entire receiver, but the input audio system is well worthy of special attention.

Starting with the pickup, it will be noted that the crystal cartridge is shunted by a 180,000-ohm resistor. The value of this resistor governs the bass cut-off of the system, and is used to prevent over-amplification of the extreme bass tones. The Crestwood uses an undegenerated pentode output system which offers the advantage of raising output in the bass at the mechanical resonance of the speaker, and treble boost because of the rising impedance vs. frequency characteristic of the dynamic speaker. Bass boost is also provided by the tapped volume control circuit. It will be seen that these various bass boosts are additive, and it would be possible for these cumulative effects to result in bad tone unbalance without the controlling effect of this resistor.

Of course, it would be possible to control this bass amplification later in the circuit; but in this case the amplifier also serves as an audio channel for the radio tuner. It is desirable that the general balance of tone between the bass, middle register and treble should simulate that of the radio input so there will not be a shift of tone quality when switching from radio to phonograph and vice versa.

A second point of interest is the shunt type equalizer consisting of the .005 mfd. condenser and 22,000-ohm resistor connected across the cartridge. A crystal cartridge without a load generates voltage in proportion to the displacement of the needle; and if records were cut in this manner, no equalization would be required. This characteristic is called "Constant Amplitude," and is actually used on commercial records from slightly above the bass cut-off frequency to the "turn-over" point, which varies in commercial shellac records between 250 and 800 cycles, depending on make. Above the turn-over point commercial records are supposed to be cut with constant velocity characteristics, in which the speed of motion of the needle is constant for a given degree of loudness, regardless of frequency. This characteristic results in halving the displacement of the needle for each octave of increasing frequency, and in crystal pickups this means a 6 d.b. drop in level for each octave. The elevation of bass thus obtained would not be objectionable if the turn-over point were in the true bass register; but the commercial turn-over point of 250-800 cycles also results in an elevated level in the baritone register. In a wide range audio system, this may result in a drumming or booming reproduction. The equalizer circuit discussed overcomes this.

Equalization is naturally obtained at the expense of level, and the voltage obtained after the highly equalized pickup is insufficient to "swing" the audio system of the "Crestwood," so that a triode preamplifier is used.

R.C.A. has adopted the unusual innovation of using the 6AU6 second i.f. amplifier tube as a medium mu triode, using the screen of the tube as the triode plate. In the simplified diagram reproduced here, the input is shown as going directly into the control grid of the 6AU6. Actually the audio goes through the secondary of the second i.f. transformer, so that the grid may receive either r.f. or audio input, *without* grid circuit switching.

The two resistors "18K" and "22K" in the screen circuit of the 6AU6 form an audio voltage divider and serve to adjust the level of the signal from the pickup so that the volume control will work through a usable range. This is especially necessary with a tapped control, so that the compensation will occur at desired volume levels.

Tapped volume controls are used to provide bass boost through

selective attenuation of the higher frequencies and, naturally, the lower the level the greater the desirable boost, because of the ear's natural insensitivity to bass tones at low levels. R.C.A. has gone a step further than the conventional by using a double-tapped control. Accordingly, the tone quality of the set is very good, even when playing at subdued levels.

In the output circuit of the 6AT6 are two tone controls; a "treble" control for progressively attenuating the high tones in the conventional manner, and a "bass" or low frequency control of unique design. When turned to the *full bass* position, the coupling condenser consists of a .0012 mfd. and a .01 mfd. condenser in parallel. In the *minimum bass* position, the coupling condenser consists of the .0012 mfd. unit, since the .01 mfd. capacitor has been effectively disconnected by the 2 megohms of resistance inserted in the circuit; and this with the 270 K grid leak effectively drops the bass out of the circuit. Naturally, intermediate settings of the control give intermediate values of bass.

The output of the tuner feeds into the R.C.A. RS-123 Audio and Power Supply Unit, which has an interesting selection of resistance values in the cathode type phase inverter to minimize hum and distortion. Details will be apparent from inspection of the schematic appearing in PHOTOFACT Folder 477-27 of Set 17, which covers the "Crestwood."

Is this "Circuit Review" interesting to you? Would you like to have similar analysis of other makes of sets? We can give you this feature if you desire it. Drop us a card, and tell us your wishes.

★ ★

THE FARNSWORTH TELEVISION MANUAL

A new volume called "The Farnsworth Television Manual" is sufficiently newsworthy and important to be brought to the attention of all PHOTOFACT subscribers interested in keeping up-to-date in television. The price is $2.50, and the manual is published by the Farnsworth Television and Radio Corporation, Fort Wayne 1, Indiana.

Actually, "The Farnsworth Television Manual" consists of a paper-bound book, captioned "Television, The New Horizon," plus a group of pamphlets or brochures totaling some 250 pages. This material comprises a training program for television servicing, and is so used by Farnsworth. Included is the Maintenance Manual of Farnsworth Models GV220 and GV240 Receivers, a television dictionary, stage by stage descriptions of television circuits, test equipment and its use, and many other subjects. The treatment is non-mathematical and only a knowledge of radio service principles is needed to make the work understandable.

We have been told that the sale of the book is being restricted generally to television centers; and this fact alone keeps us from telling you that the book is in the "must" category if you contemplate entering the television service field.

★ ★

FIELD EXPERIENCES

Here is your opportunity for passing practical service experiences to others for the benefit of all. For every service "Field Experience" published, we issue to the author a certificate that is good for one PHOTOFACT Folder Set. Since it is impossible to verify the accuracy of contributions, we cannot be responsible for either the diagnosis made of the receiver trouble, or the results which will be obtained by following the suggested repair routine. All contributions become the property of Howard W. Sams & Co., Inc.

★ ★

ARVIN 444A

Photofact 461-3, Set 1

"Complaint: A high-pitched whistle, which sounded like a microphonic tube.

"Examination showed that the speaker rested against the gang condenser. It had been insulated with a piece of white tape by the factory, but this provided insufficient cushioning. Forcing a small wad of absorbent cotton between the speaker frame and the end of the gang condenser cleared up the trouble."

Submitted by: Mr. Max Raffer, Raffer's Repair Service, 1252 Bedford Avenue, Brooklyn, New York

★ ★

PHILCO 46-350 PORTABLE

Photofact 4610-24, Set 10

"Complaint: Distortion and poor sensitivity.

"Check the 3.3 meg. 1st a.f. screen grid resistor for open. This is item No. 34 on schematic.

"I have found this trouble in several of these models."

RCA 54B1 PORTABLE

Photofact 467-22, Set 7

"Complaint: Intermittent reception.

"Pressing on battery holder causes the set to cut off and on. This trouble is caused by a broken ground lead from the oscillator coil to ground. This lead gets down between battery holder and chassis, and is worn by the battery holder clamp. Resolder this wire to chassis."

Submitted by: Mr. Stanley Caldwell, Radio & Appliance Repairing, Natural Bridge, New York

★ ★

EMERSON 522

Photofact 468-10, Set 8

"I had a very unusual experience with an Emerson 522 some time ago. The set would light but would not play.

"The trouble was found in a 12AT6 tube with a too low heater resistance; so that the voltage was low on this tube and a bit high on the others."

Submitted by: Mr. George H. Williams, Williams Radio & Electric Co., 604 Clay Street, Marietta, Georgia

★ ★

MOTOROLA 65F11, 65F12

Photofact 466-19, Set 6

"Motorola Model 65F12 phono-combination. Brand new . . . had a loud hum suspiciously like filter condenser trouble. I found the transformer mounted with self-tapping screws, and screws had stripped hole threads in chassis allowing the transformer to loosen slightly. The 7B5 a.f. tube amplified this vibration.

"Remedy: Replace screws with 6/32 bolts and nuts."

★

CROSLEY 56TZ

Photofact Pending

"A Crosley Model 56TZ table combination had a noise that was similar to a loose connection, and was particularly bothersome when tuning. It was found that the metal housing covering tuning controls was making an intermittent connection with the mounting lugs on the chassis. Insulate with Scotch Tape or the like and the noise will disappear. A grounding wire from housing to chassis would not cure noise!"

★

1A7 CONVERTER TUBES

"Here is a valuable added use for an isolation transformer if a variable line voltage control is included. Sets using the 1A7 tube seem to be critical for cutting out at reduced line voltages. Owners in areas with heavy line loads are particularly troubled. Merely check set on isolation transformer to find where oscillator section of 1A7 cuts out. If too low, replace with new tube that has lower cutout voltage. Tube checkers fail to show up this problem."

Submitted by: Mr. Guy B. Welsh, 600 Lincoln Street, Taft, California

★ ★

RCA 66X1

Photofact 467-23, Set 7

"The multiple padder assembly in the output i.f. transformer (Item 45) had become leaky (in the neighborhood of 70,000 ohms) bleeding B voltage into the a.v.c. network. Intermittent operation of the set was the only symptom. Replace complete unit."

Submitted by: Mr. Earl Young, Young's Radio, 433 Needham Avenue, Kent, Ohio

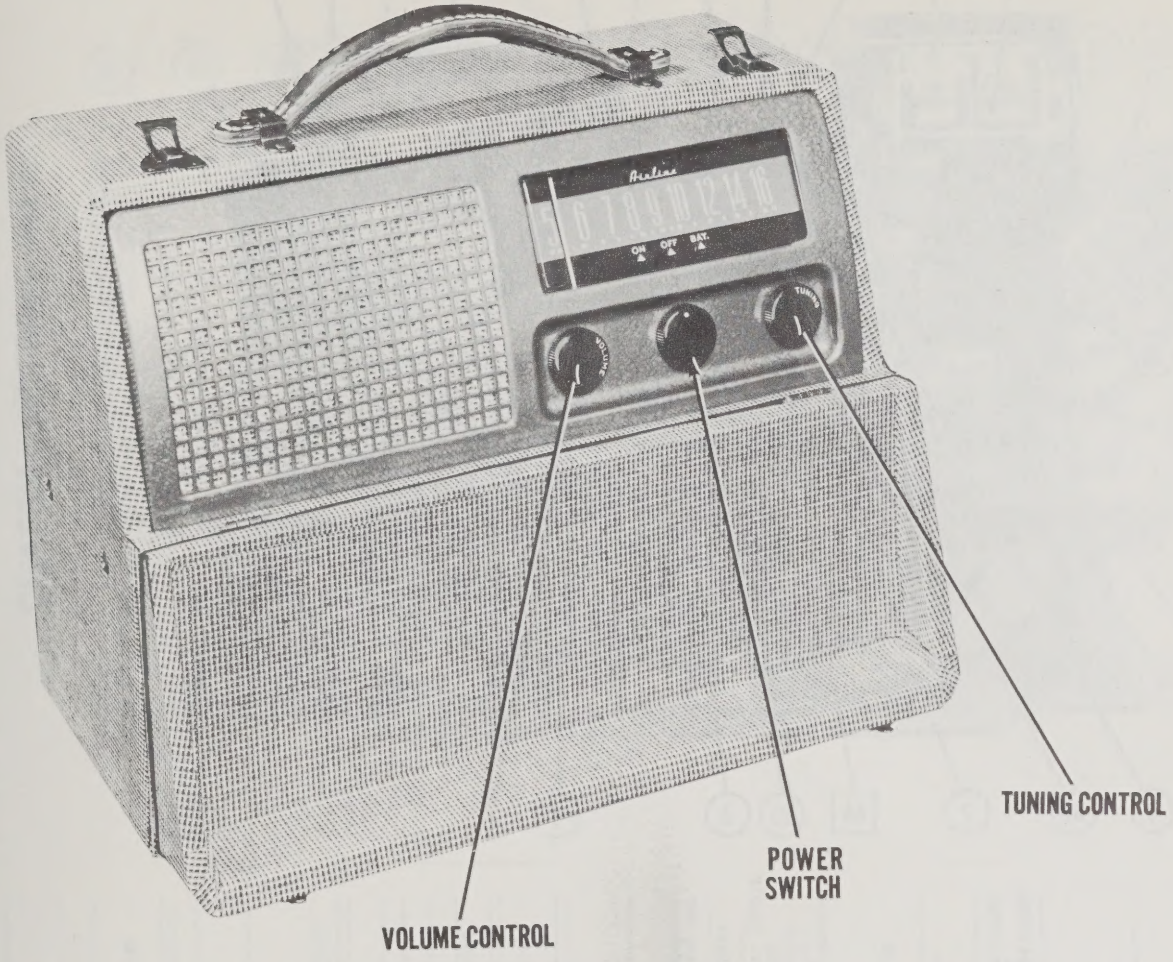
PUBLICATION DATES

When will other sets of PHOTOFACT Folders be published?

Volume 3—Set No. 30 . . . . . **December 15**
Volume 4—Set No. 31 . . . . . **January 15**
Volume 4—Set No. 32 . . . . . **January 15**
Volume 4—Set No. 33 . . . . . **February 15**

If you have been unable to get any issues of PHOTOFACT *Folder Sets, send your order and money directly to us and we will see that you are supplied.*

AIRLINE MODEL 74WG-1056A
BATTERY OPERATED



AIRLINE MODEL 74WG-1056A
BATTERY OPERATED

AIRLINE MODEL 74WG-1056A

TRADE NAME	Airline, Model 74WG-1056A
SUPPLIER	Montgomery Ward & Co., 619 Chicago Ave., Chicago, Ill.
TYPE SET	Three Power Portable Superheterodyne with Loop Antenna
TUBES (FIVE)	Types, 1R5 Converter, 1U4 1st IF Amp., 1U4 2nd IF Amp., 1S5 Det.-AVC-AF, 3V4 Power Output.
POWER SUPPLY RATING	117 Volts AC-DC or 9 Volt "A" Supply and 90 Volt "B" Supply in Pack Form .140 Amp. @ 117 Volts AC or 47MA @ 9V DC and 15MA @ 90V DC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use battery power when available. If AC power is used, use an isolation transformer when available. If not, connect a .1 MFD capacitor in series with low side of the signal generator and B-. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin 6 (grid) 1U4 1st IF Tube (2). Low side to B-.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2	Adjust for maximum output. If AC power is used without an isolation transformer reduce dummy ant. to 200MMF to reduce hum modulation.
2	.1 MFD.	High side to Pin 6 (grid) 1R5. Low side to B-.	"	"	"	A3,A4.	Adjust for maximum output.
3	.1 MFD.	"	1620KC	"	"	A5	Adjust for maximum output. Install receiver in cabinet.
4	50MMF.	High side to ext. ant. clip. Low side to ext. ground clip.	1400KC	Tune for maximum output.	"	A6	Adjust for maximum output. Set pointer to 1400KC reference mark.

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

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DATE 12/47 SET #29 FOLDER #4719-1

PARTS LIST AND DESCRIPTIONS

AIRLINE MODEL 74WG-1056A
BATTERY OPERATED

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	1R5	1R5	7AT	
2	1st IF Amp.	1U4	1U4	6AR	
3	2nd IF Amp.	1U4	1U4	6AR	
4	Det.-AVC-AF	1S5	1S5	6AU	
5	Power Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRLINE PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	80	150	45X356				AF886D4A	UP7DJ63†	◓ Filter
B	30	150							■ "
C	100	25							▲ Fil. Bypass
D	40	25					PRS25-100	BR502	" "
7	.05	400	D66503	TP426	MPH-4-05	TC-15	484-05	DT4S5	Line Filter
8	.05	200	B66503	TP426	S-4-05	TC-15	484-05	DT4S5	Line Isolation
9	.05	200	B66503	TP426	S-4-05	TC-15	484-05	DT4S5	Fil. Bypass
10	.05	200	B66503	TP426	S-4-05	TC-15	484-05	DT4S5	" "
11	.05	200	B66503	TP426	S-4-05	TC-15	484-05	DT4S5	" "
12	.005	400	D66502	TP408	S-6-005	TC-25	484-005	DT6D5	Output Plate Bypass
13	.005	400	D66502	TP408	S-6-005	TC-25	484-005	DT6D5	Audio Coupling
14	.05	200	B66503	TP426	S-4-05	TC-15	484-05	DT4S5	AF Screen Bypass
15	.005	200	B66502	TP408	S-6-005	TC-25	484-005	DT6D5	Audio Coupling
16	.05	200	B66503	TP426	S-4-05	TC-15	484-05	DT4S5	RF Bypass Pwr. Supply Decoupling
17	.05	200	B66503	TP426	S-4-05	TC-15	484-05	DT4S5	
18	.05	200	B66503	TP426	S-4-05	TC-15	484-05	DT4S5	IF Screen Bypass
19	.04	200	B66403	TP425	S-6-04	TC-14	484-04	DT4S4	AVC Filter
20	100		47X476	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	AF Plate Bypass Cer.
21A	50		47X112	MC225	MO.5-45	1FM-45	1468-00005	5W5Q5	Diode RF Filter
B	50			MC225	MO.5-45	1FM-45	1468-00005	5W5Q5	" " "
22	100		47X476	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	IF Coupling

†Parallel sections to obtain desired capacity.

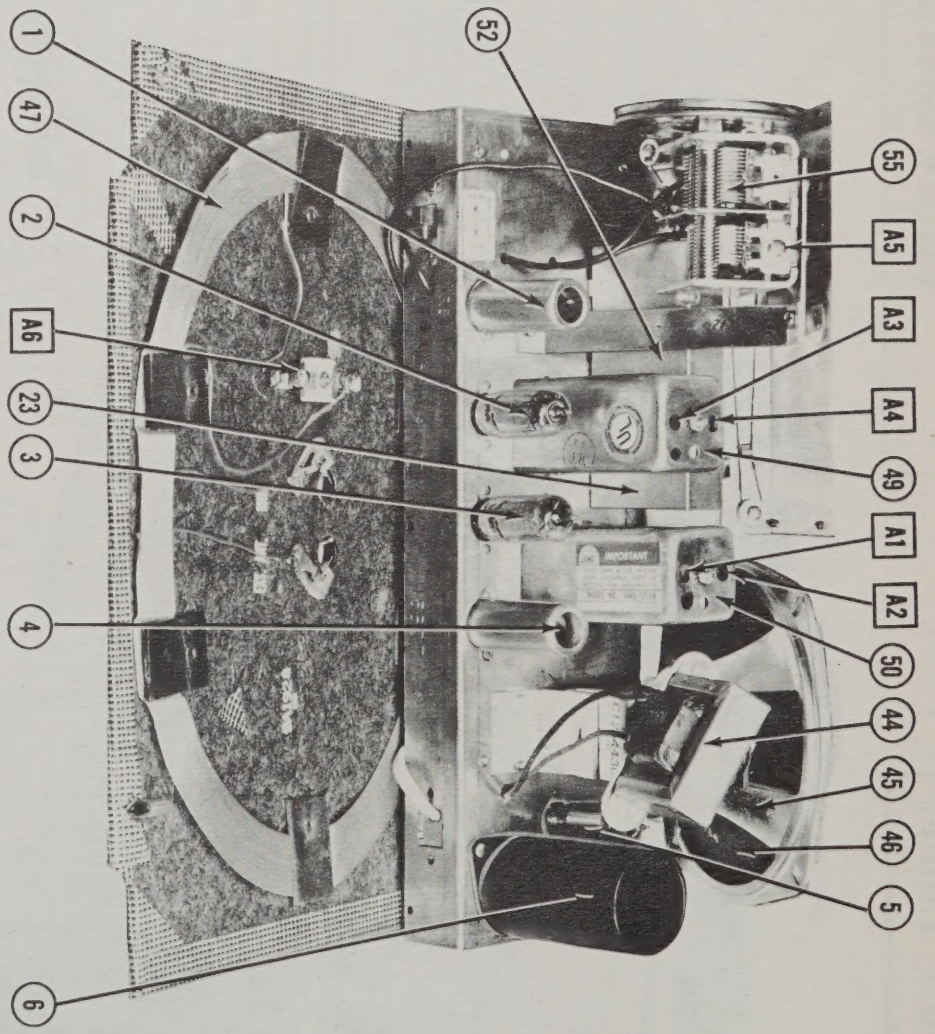
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
23A	500KΩ	½	36X370	MK401	D13-133	AM-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 23A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	IDENTIFICATION CODES
24	100KΩ	½	B84104	BTS-100K	Br.-Blk.-Yl. Oscillator
25	15KΩ	½	B84153	BTS-15K	Br.-Grn.-Or. Decoupling
26	1500Ω	½	B84152	BTS-1500	Br.-Grn.-Red "
27	2.2 Meg.	½	B85225	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
28	12KΩ	½	B84152	BTS-12K	Br.-Red-Or. IF Plate Load
29	3.3 Meg.	½	B85335	BTS-3.3 Meg.	Or.-Or.-Grn. IF Grid
30	47KΩ	½	B85473	BTS-47K	Yl.-Vi.-Or. Diode RF Filter
31	4.7 Meg.	½	B85475	BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Grid
32	4.7 Meg.	½	B85475	BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Screen Dropping
33	1 Meg.	½	B84105	BTS-1 Meg.	Br.-Blk.-Grn. AF Plate Load
34	3.3 Meg.	½	B85335	BTS-3.3 Meg.	Or.-Or.-Grn. Output Grid
35	1500Ω	½	B84152	BTS-1500	Br.-Grn.-Red Filter
36	82Ω	2	43X223		Rectifier Ballast
37	2000Ω	10	43X221	AB-2000	Filament Dropping
38	330Ω	½	B84331	BW-½-330	Or.-Or.-Br. Filament String
39	1000Ω	½	B84102	BTS-1000	Br.-Blk.-Red " "
40	390Ω	½	B84391	BW-½-390	Or.-White-Br. " "
41	270Ω	½	B84271	BW-½-270	Red-Vi.-Br. " "
42	180Ω	½	B84181	BW-½-180	Br.-Gray-Br. " "
43	33Ω	½	B85330	BW-½-33	Or.-Or.-Blk. Battery Saver

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA AIRLINE PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
44	10000Ω	3.4Ω	850Ω	.44Ω	Part of 12A443	A-3823	T22S47*	A-2936	*Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA AIRLINE PART No.	JENSEN PART No.		INSTALLATION NOTES
45	FIELD PM	VC IMP. 3.4Ω	12A443	ST-107‡ Mod. P5-V		‡Fabricate new mounting bracket.
46	CONE DIA. 5"	VC DIA. 1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

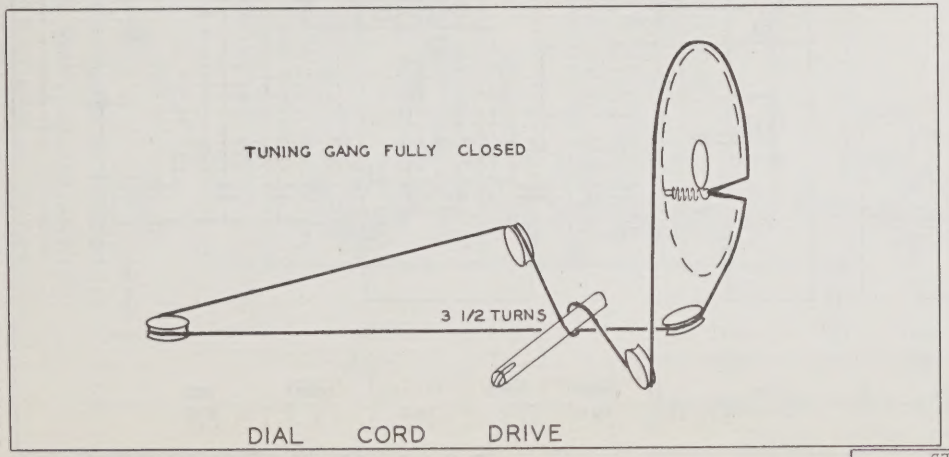
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA AIRLINE PART No.	MEISSNER PART No.	
47	Loop Ant.	.2Ω	1.5Ω	9A1928		
48	Osc. Coil	2.5Ω	6Ω	9A1927	14-1040§	§Add 50MMFD from grid to high side tuning cap.
49	Input IF	13Ω	16Ω	9A1840	16-6658	
50	Output IF	16Ω	13Ω	9A1841	16-6660	

BATTERIES

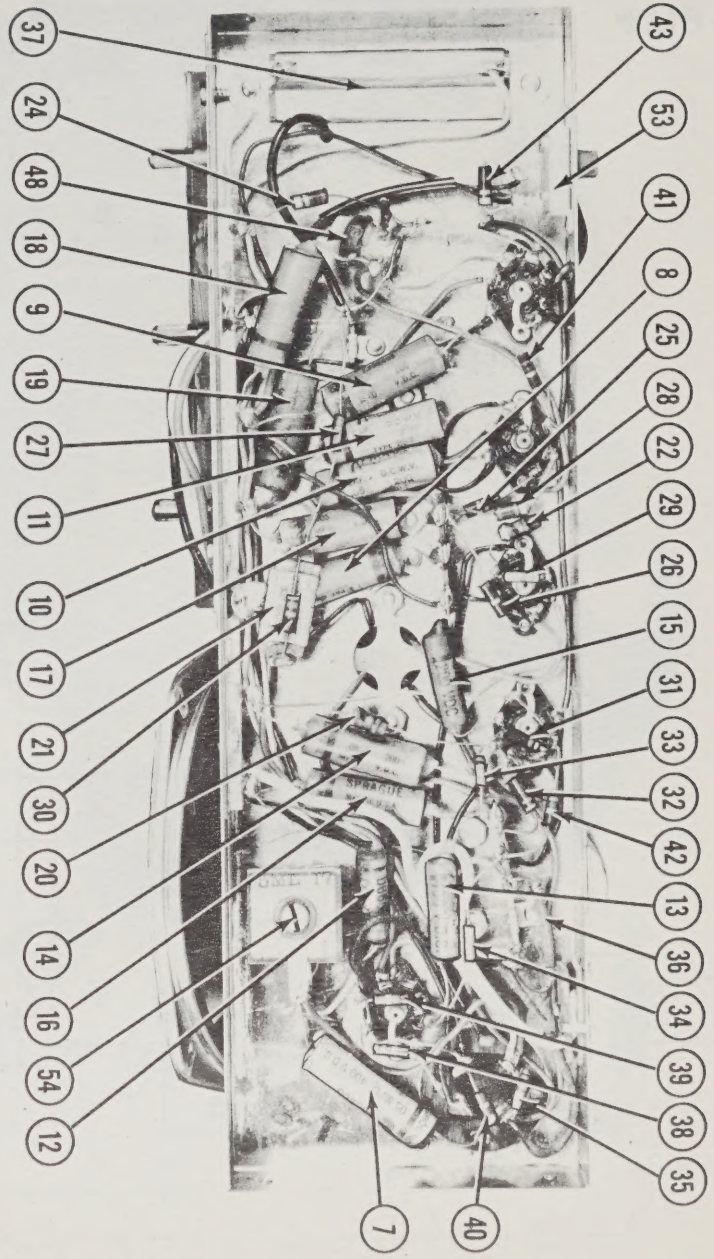
ITEM No.	VOLTAGE	AIRLINE PART No.	EVEREADY "A"	EVEREADY "B"	EVEREADY "A-B"	INSTALLATION NOTES
51	9V "A" 90V "B"	62-35			#754	

MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
52	Switch	2A371	AC-DC-On-Batt.
53	"	2A175	Battery Saver (SPST)
54	Rectifier	66X7	Selenium
55	2 Gang Var. Cap	14A186	(12-454 MMF, 28-193 MMF)
A6	Trimmer	17A123	Ant. Adj. (1.5-12MMF)

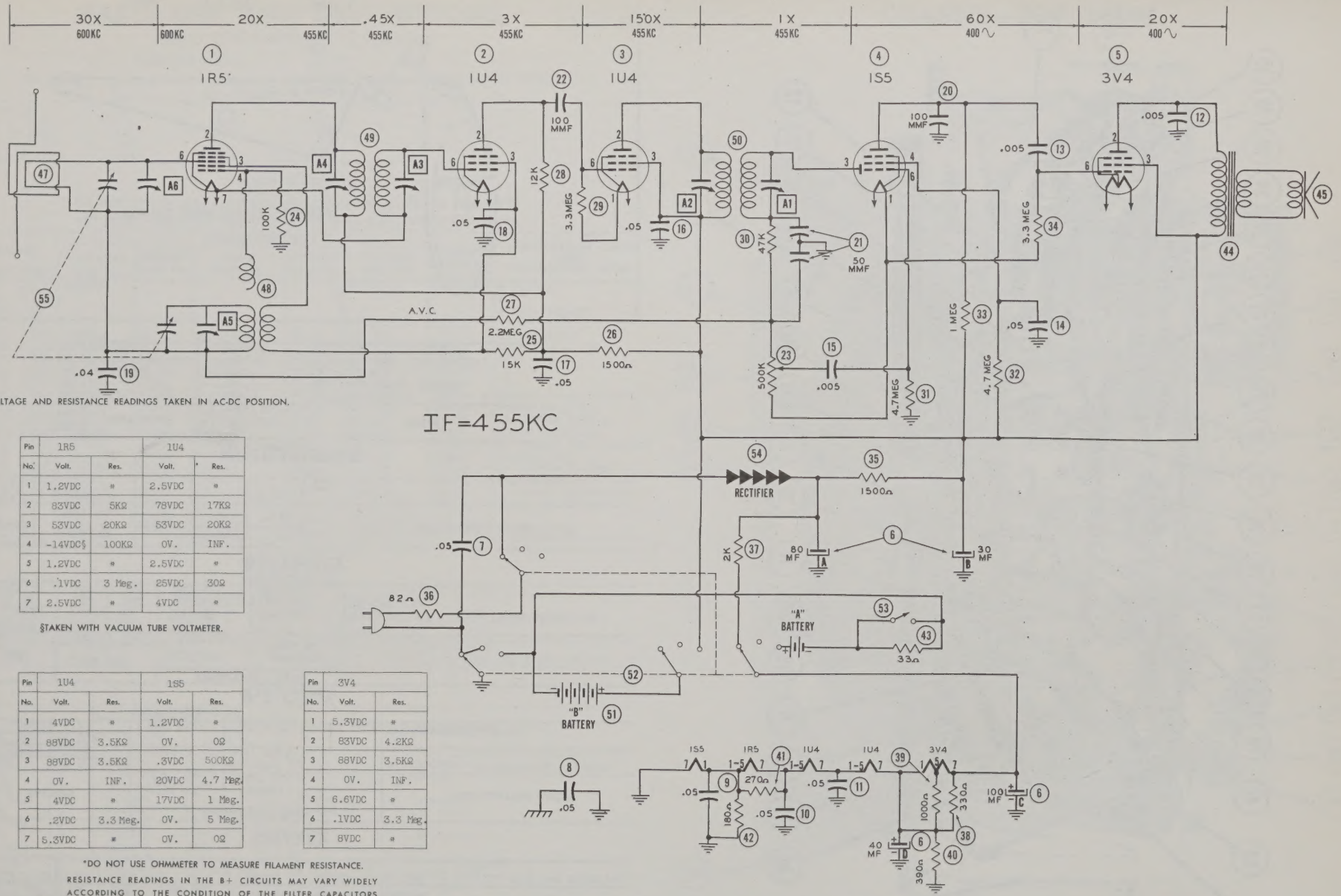


CHASSIS—BOTTOM VIEW



AIRLINE MODEL 74WG-1056A BATTERY OPERATED

AIRLINE MODEL 74WG-1056A BATTERY OPERATED



VOLTAGE AND RESISTANCE READINGS TAKEN IN AC-DC POSITION.

Pin No.	1R5 Volt.	1R5 Res.	1U4 Volt.	1U4 Res.
1	1.2VDC	*	2.5VDC	*
2	83VDC	5KΩ	78VDC	17KΩ
3	53VDC	20KΩ	53VDC	20KΩ
4	-14VDC§	100KΩ	0V.	INF.
5	1.2VDC	*	2.5VDC	*
6	.1VDC	3 Meg.	25VDC	30Ω
7	2.5VDC	*	4VDC	*

§TAKEN WITH VACUUM TUBE VOLTMETER.

Pin No.	1U4 Volt.	1U4 Res.	1S5 Volt.	1S5 Res.
1	4VDC	*	1.2VDC	*
2	88VDC	3.5KΩ	0V.	0Ω
3	88VDC	3.5KΩ	.3VDC	500KΩ
4	0V.	INF.	20VDC	4.7 Meg.
5	4VDC	*	17VDC	1 Meg.
6	.2VDC	3.3 Meg.	0V.	5 Meg.
7	5.3VDC	*	0V.	0Ω

Pin No.	3V4 Volt.	3V4 Res.
1	5.3VDC	*
2	83VDC	4.2KΩ
3	88VDC	3.5KΩ
4	0V.	INF.
5	6.6VDC	*
6	.1VDC	3.3 Meg.
7	8VDC	*

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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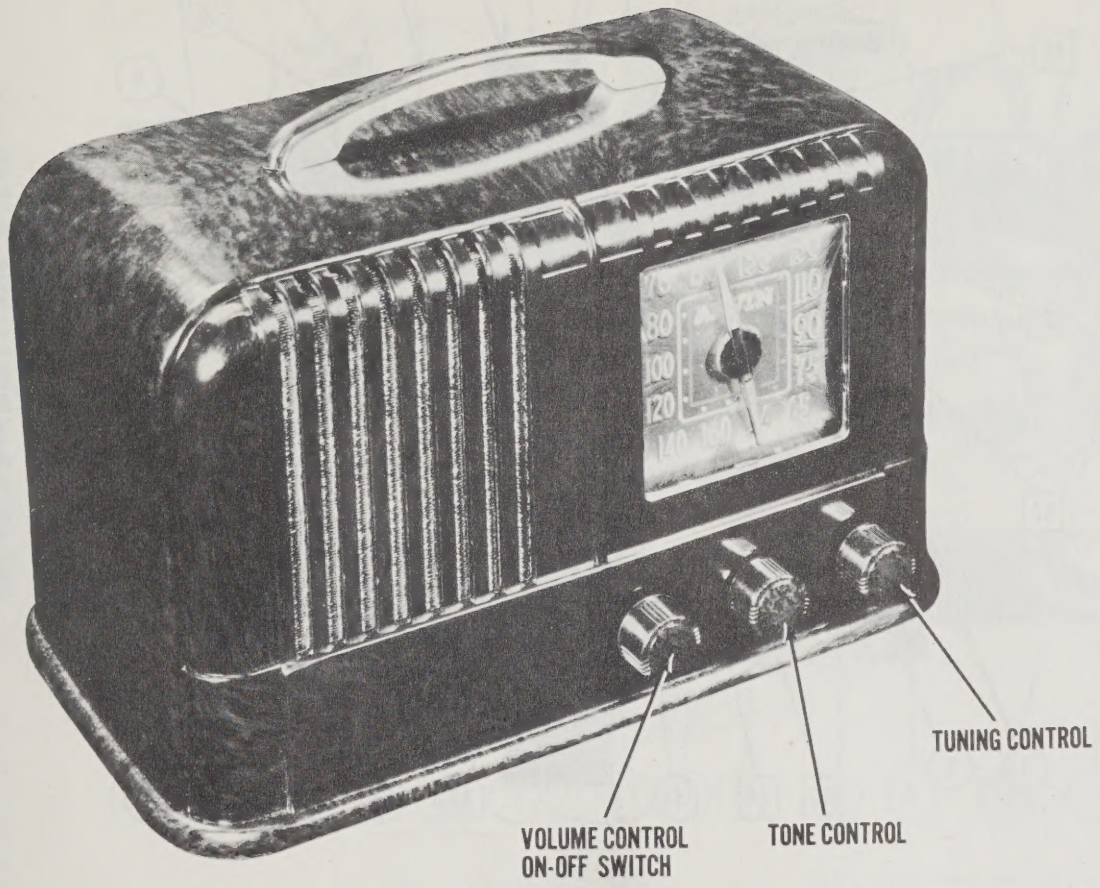
4719-1

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative by shorting to common negative during stage gain measurements.

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

ARVIN MODELS 664, 664A
(Ch. RE-206-1), 6640 (Ch. RE-206-2)



ARVIN MODELS 664, 664A
(Ch. RE-206-1), 6640 (Ch. RE-206-2)

ARVIN MODEL 664

TRADE NAME	Arvin, Models 664, 664A (Ch. RE-206-1), 6640 (Ch. RE-206-2)
MANUFACTURER	Noblitt-Sparks Industries, Inc., Columbus, Ind.
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna
TUBES (SIX)	Types, 12SK7 RF Amp., 12SA7GT Converter, 12SK7 IF Amp., 12SQ7GT Det.-AVC-AF, 35L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	105-125 Volts AC-DC
TUNING RANGE—BROADCAST	540-1600KC RATING .250 Amp. @ 117V AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer parallel with vertical side of dial. Use isolation transformer if available. If not, connect a .1 MFD capacitor in series with low side of signal generator and B-. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to center stator of tuning cap. Low side to B-.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD to reduce hum modulation.
2		Loop	1400KC	1400KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3		"	"	Tune for maximum output.	"	A6,A7	Adjust for maximum output.

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DATE 12/47 SET #29 FOLDER #4719-2

PARTS LIST AND DESCRIPTIONS

ARVIN MODELS
664, 664A, 6640

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		ARVIN PART No.	STANDARD REPLACEMENT		
1	RF Amp.	12SK7	12SK7	8N	
2	Converter	12SA7GT	12SA7GT	8AD	
3	IF Amp.	12SK7	12SK7	8N	
4	Det.-AVC-AF	12SQ7GT	12SQ7GT	8Q	
5	Power Output	35L6GT	35L6GT	7AC	
6	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	ARVIN PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	
7A	40	150	A19239	FP-306	DY-40+20-150	EL-24	AF88D	UP4215	Filter
B	20	150							"
8	.05	400	C20068-503	TP426	S-4-05	TC-15	484-05	DT4S5	Line Filter
9	.02	400	C20068-203	TP423	S-4-02	TC-12	484-02	DT4S2	Output Plate Bypass †
10A	.1	400	C20068-104	TP428	S-4-1	TC-1	484-.1	DT4P1	RF Bypass Power Supply*
B	.03	400	C20068-303	TP424	S-6-03	TC-13	484-03	DT4S3	RF Bypass Pwr. Supply
11	.005	600	C20069-502	TP408	S-6-005	TC-25	484-005	DT6D5	Audio Coupling
12	.01	400	C20068-103	TP421	S-4-01	TC-11	484-01	DT4S1	" "
13	.05	400	C20068-503	TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter
14	.1	400	C20068-104	TP428	S-4-1	TC-1	484-.1	DT4F1	Line Isolation
15	.01	400	C20068-103	TP421	S-4-01	TC-11	484-01	DT4S1	Ant. Isolation
16A	.002	600	C20069-202	TP405	S-6-002	TC-22	684-002	DT6D2	Tone Compensation†
B	.1	200	C20067-104	TP428	S-4-1	TC-1	484-.1	DT4F1	" " *
17	250	500	C20065-251	MC240	MO.5-325	1FM-325	1468-00025	5W5T25	Diode Filter
18	100	500	C20065-101	MC235	MO.5-31	1FM-31	1468-00025	5W5T1	Osc. Grid Cap.
19	14	500	CA19182						Converter Grid
20	250	500	C20065-251	MC240	MO.5-325	1FM-325	1468-0001	5W5T25	Audio Plate Bypass

*Used in early production. †Used in later production.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	ARVIN PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
21A	500KΩ	½	C19244	MK401	D13-133	AM-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 21A per instructions
C	Switch		"	M26	41	SW-A	" " " "
22A	500KΩ	½	C19965	MK401	D13-133	AM-60-Z	Tone Control-Late production
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 22A per instructions
22A	20KΩ	½	C19279	UM124	D11-120	AM-40-S	Tone Control-Early production
B	Shaft		Not Req.	SS25	E	KSS-3	Attach to 22A per instructions

RESISTORS

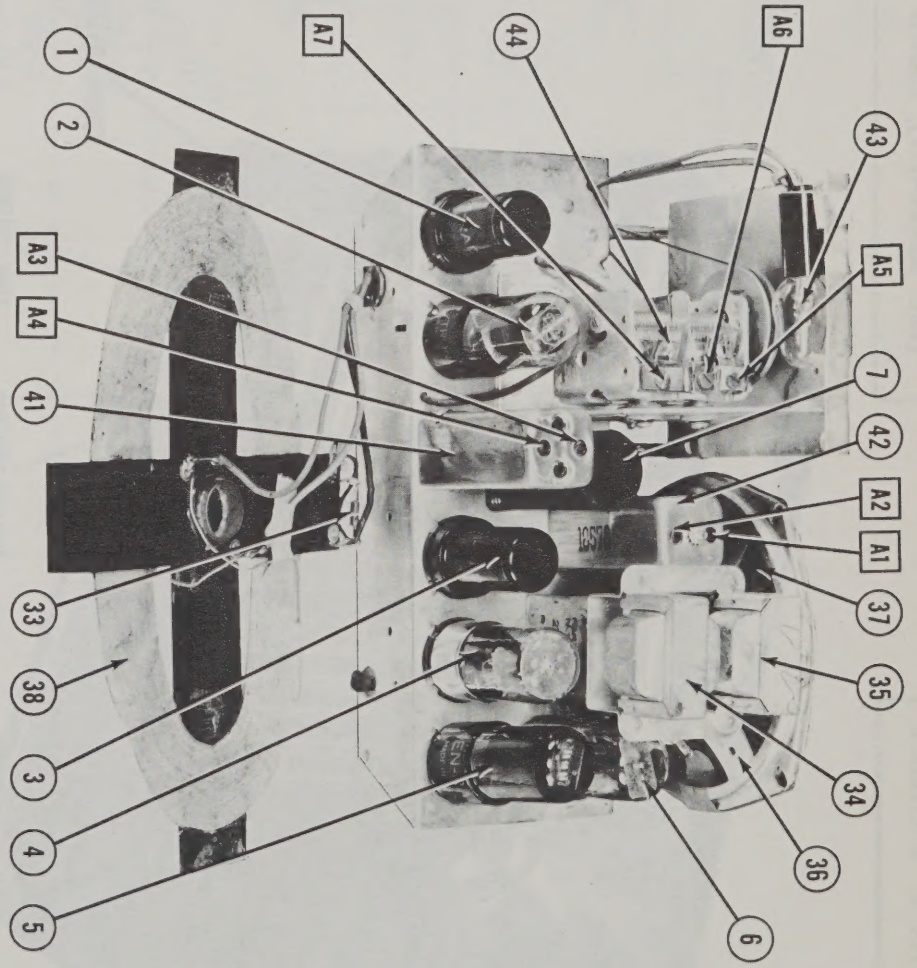
ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	ARVIN PART No.	IRC PART No.	
23	6800Ω	½	C20060-682	BTS-6800	Blue-Gray-Red Converter Grid
24	330KΩ	½	C20060-334	BTS-330K	Or.-Or.-Yl. Line Isolation
25	22KΩ	½	C20060-223	BTS-22K	Red-Red-Yl. Oscillator Grid
26	6.8 Meg.	½	C20060-685	BTS-6.8 Meg	Blue-Gray-Grn. AVC Network
27	2.2 Meg.	½	C20060-225	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
28	6.8 Meg.	½	C20060-685	BTS-6.8 Meg.	Blue-Gray-Grn. AF Grid
29	470KΩ	½	C20060-474	BTS-470K	Yl.-Vi.-Yl. AF Plate Load
30	150Ω	½	C20060-151	BW-½-150	Br.-Grn.-Br. Output Cathode
31A	12K	1	C20070-123	BTA-12K	Br.-Red-Or. Bleeder*
B	15KΩ	1	C20070-153	BTA-15K	Br.-Grn.-Or. Bleeder†
32	15Ω	½	C20060-150	BW-½-15	Br.-Grn.-Blk. Surge Limiter
33	10KΩ	½	C20060-103	BTS-10K	Br.-Blk.-Or. Antenna Loading

*Used in early production. †Used in later production.

FILTER CHOKE

ITEM NO.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000~)	ARVIN PART NO.	STANCOR PART NO.	THORDARSON PART NO.	MERIT PART No.	
34	.041A	215Ω	8.5 Henries	AC18583-1	C-1723	T20C52	C-2975	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ARVIN	STANCOR	THORDAR'N	MERIT	
	PRI.	SEC.	PRI.	SEC.	PART No.	PART No.	PART No.	PART No.	
35	2050Ω	3.05Ω	110Ω	.4Ω	AC18582-1	A-3876	T22S45	A-2928	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			ARVIN PART No.	JENSEN PART No.		
36	FIELD PM	VC IMP. 3.05Ω	C19550	ST-107 ‡ Mod. P5-V		‡Drill and tap magnet frame.
37	CONE DIA. 5-5/32"	VC DIA. 1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

Speaker Assembly, Including Transformer Mounting Bracket, may be obtained under Part No. AC19872-1.

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	ARVIN PART No.	MEISSNER PART No.	
38A	Loop Ant.	0Ω	.9Ω	AC18579-1		
B	" "			AD21423-1		Model 6640
39	RF Coil	4.5Ω	10Ω	AC19860-1	14-1027	
40	Osc. Coil	.8Ω	10.5Ω	AC18580-1	14-1040	
41	Input IF	16Ω	16Ω	AC21009-1	16-6666	
42	Output IF	15Ω		AC18578-1		

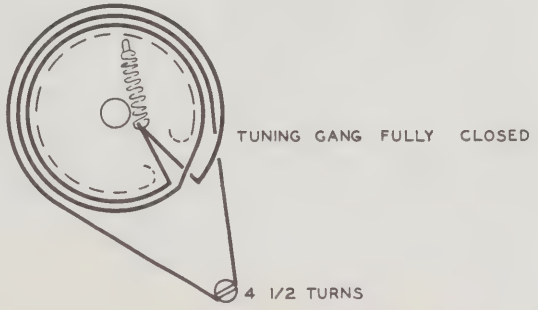
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					ARVIN PART No.		
43	Screw	110	.05		A-19135		Type C7

MISCELLANEOUS

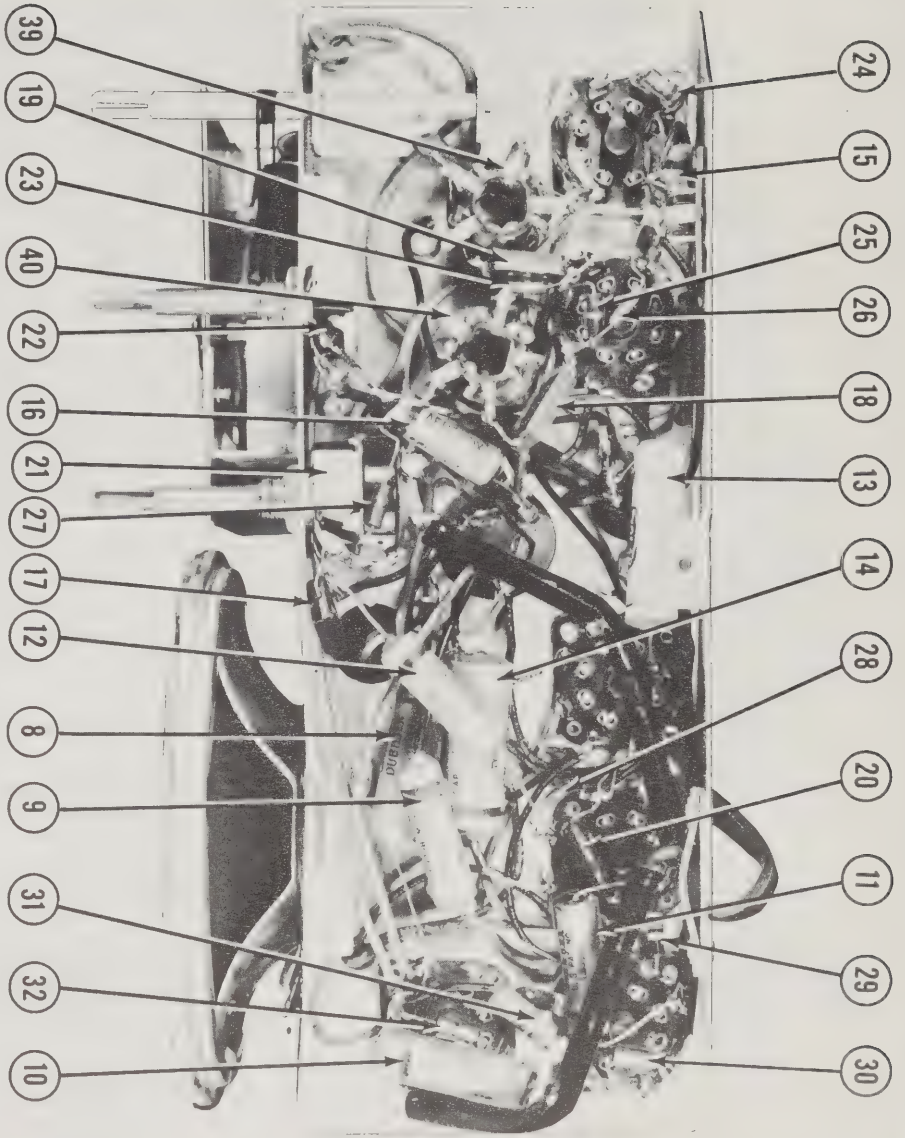
ITEM No.	PART NAME	ARVIN PART No.	NOTES
44	Tuning Cap.	N-18564$	38-514, 18-253, 13-92MMF

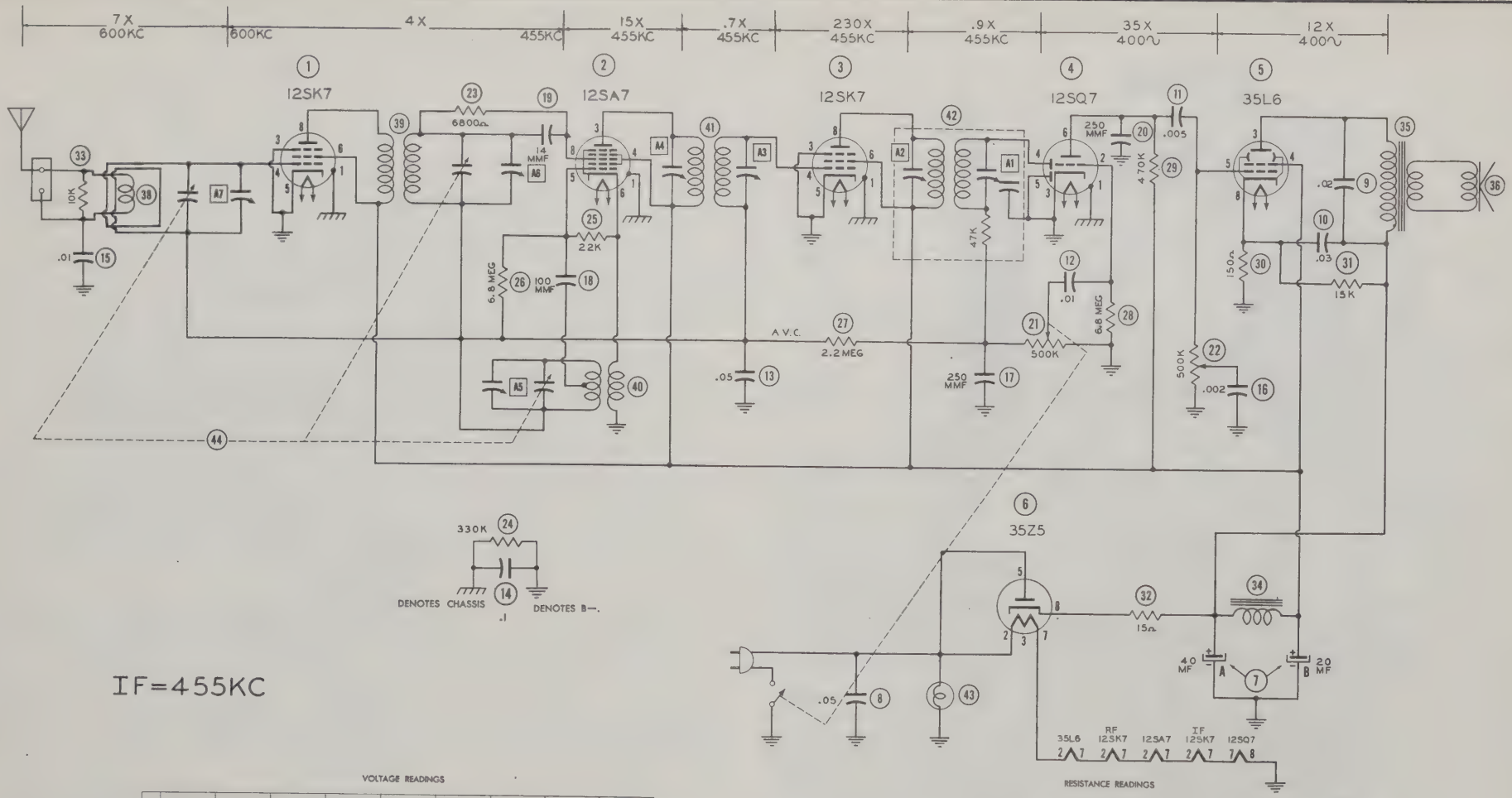
$When ordering replacement tuning cap. use No. stamped on back of original.



DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SK7GT	0V.	50VAC	0V.	-1VDC	0V.	93VDC	37VAC	93VDC
2	12SA7GT	0V.	37VAC	93VDC	93VDC	-8.5VDC§	0V.	24VAC	-1VDC
3	12SK7GT	0V.	24VAC	0V.	-1VDC	0V.	93VDC	12VAC	93VDC
4	12SQ7GT	0V.	-.9VDC	0V.	-.4VDC	0V.	55VDC	12VAC	0V.
5	35L6GT	0V.	80VAC	108VDC	93VDC	0V.	0V.	50VAC	5.8VDC
6	35Z5GT	0V.	117VAC	108VAC	111VDC	117VAC	0V.	80VAC	112VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SK7GT	330KΩ	44Ω	0Ω	2.7 Meg.	0Ω	12KΩ	34Ω	12KΩ
2	12SA7GT	330KΩ	34Ω	12KΩ	12KΩ	22KΩ	1Ω	24Ω	2.7 Meg.
3	12SK7GT	330KΩ	24Ω	0Ω	2.7 Meg.	0Ω	12KΩ	12Ω	12KΩ
4	12SQ7GT	330KΩ	7 Meg.	0Ω	550KΩ	0Ω	480KΩ	12Ω	0Ω
5	35L6GT	INF.	65Ω	12KΩ	12KΩ	500KΩ	0Ω	44Ω	150Ω
6	35Z5GT	INF.	80Ω	77Ω	12KΩ	80Ω	INF.	65Ω	12KΩ

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RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDUCTION OF THE FILTER CAPACITORS

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4719-2

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. **DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.**
2. **Socket connections are shown as bottom views.**
3. **Measured values are from socket pin to common negative.**
4. **Line voltage maintained at 117 volts for voltage readings.**
5. **Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.**
6. **Volume control at maximum, no signal applied for voltage measurements.**

BENDIX MODELS
526MA, 526MB, 526MC

BENDIX MODELS
526MA, 526MB, 526MC

BENDIX MODEL 526MB

TRADE NAME	Bendix, Models 526MA, 526MB, 526MC
MANUFACTURER	Bendix Radio, Div. of Bendix Aviation Corp., Baltimore, Md.
TYPE SET	AC-DC Operated Superheterodyne with Loop Antenna
TUBES (FIVE)	Types, 12BE6 Converter, 12BA6 IF Amp., 12AT6 Det.-AVC-AF, 50B5 Power Output, 35W4 Rectifier.
POWER SUPPLY	105-125 Volts AC-DC
TUNING RANGE—BROADCAST	540-1620KC RATING .240 Amps. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to 1st reference line at left end of dial backplate. Use isolation transformer if available. If not, connect a .1 MFD capacitor in series with low side of signal generator and B-. Volume control at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.01 MFD.	High side to rear stator of tuning cap. Low side to B-.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD to reduce hum modulation.
2	50MMFD.	High side to ext. ant. terminal. Low side to chassis.	1475KC	2nd reference line from right end of dial backplate.	"	A5	Adjust for maximum output.
3	50MMFD.	"	"	Tune for maximum output.	"	A6	Adjust for maximum output. Check calibration at 965 & 580KC (2nd and 4th reference lines from left end of dial backplate). If calibration is not satisfactory, plates of both oscillator & ant. section must be "knifed" properly.

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DATE 12/47 SET #29 FOLDER #4719-3

PARTS LIST AND DESCRIPTIONS

BENDIX MODELS [illegible]

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: BENDIX PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12BE6	12BE6	7CH	
2	IF Amp.	12BA6	12BA6	7BK	
3	Det.-AVC-AF	12AT6	12AT6	7ET	
4	Power Output	50B5	50B5	7BJ	
5	Rectifier	35W4	35W4	6F8	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: BENDIX PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	40	150	CE3E01	T2N511	DSS-2x40-150	TA-440	PRSA150-40-40	ERD4415	Filter - Red
B	40	150							" - Blue
C	12	150		TC44	M-12-150	UT-121	PRS150-12	BR1215	" - Green
7	.05	600	CP6T40	TP415	MPH-6-05	TC-15	684-05	DT6S5	Line Filter
8	.1	400	CP4T10	TP428	S-4-1	TC-1	484-.1	DT4P1	Line Isolation
9	.02	400	CP4T36	TP424	S-6-03	TC-13	484-03	DT4S3	Output Plate Bypass
10	.006	400	CP4T20	TP406	S-6-006	TC-26	484-006	DT6D6	Audio Coupling
11	.004	600	CP6T16	TP407	S-6-004	TC-24	684-004	DT6D4	" "
12	.05	400	CP4T40	TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter
13	.004	600	CP6T16	TP407	S-6-004	TC-24	684-004	DT6D4	Ext. Ant. Isolation
14	1000	500	CM5A46	MC25S	MO.3-21	1FM-21	1469-001	1W5D1	AF Plate Bypass
15	47	500	CC6A3C	MCB22A	MOS.5-45	MS-45	1469-00005	5R5S5	Osc. Grid

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: BENDIX PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
16A	47KΩ	½	RV0S0C	MR43#	D13-133#	M-C6-Z#	Volume Control
B	Shaft		Not Req.	Not Req.	"	Not Req.	Attach to 16A per instructions
C	Switch		" "	M2C	41	SW-A	" " " " "

#Install a 47KΩ resistor in series with the right hand terminal of the control and the lead connecting to the same terminal of the original control (controls viewed from shaft side, terminals down.)

RESISTORS

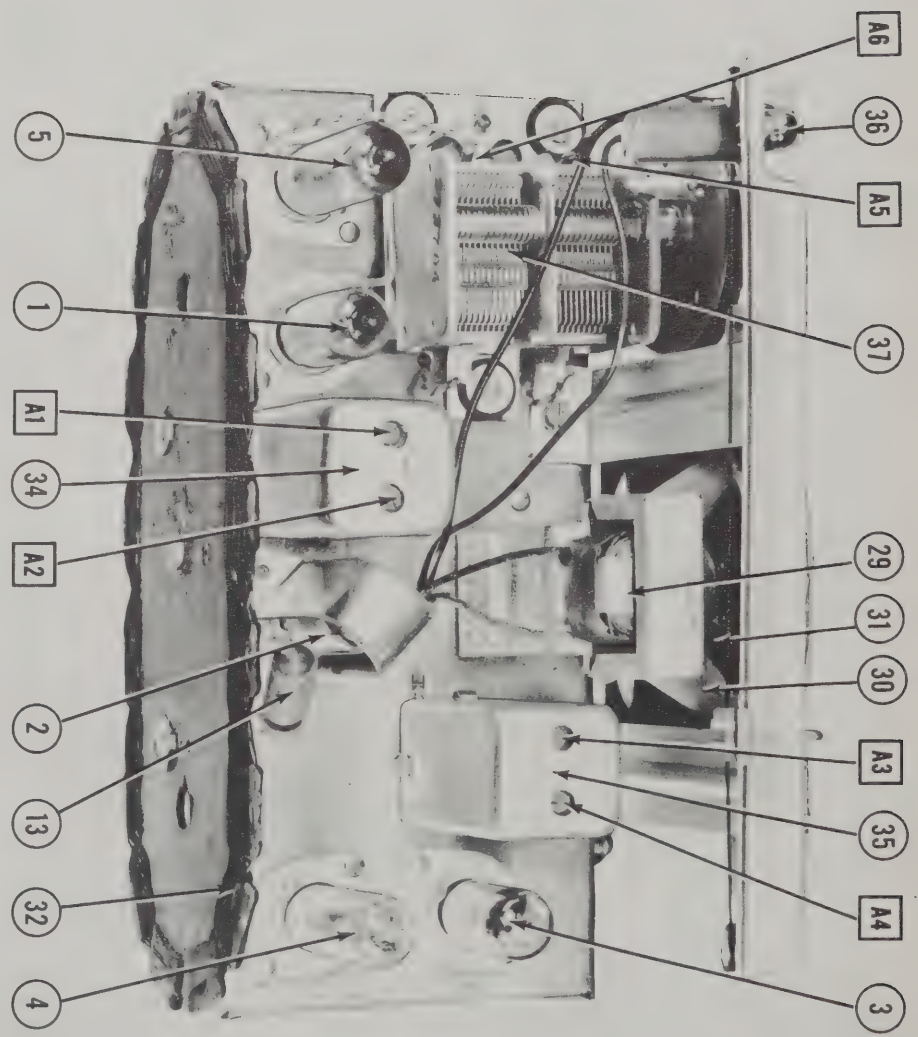
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: BENDIX PART No.	IRC PART No.	IDENTIFICATION CODES
17	22KΩ	¼	RC1H40	BTS-22K	Red-Red-Or. Oscillator Grid
18	15 Meg.	¼	RC1H76	BTS-15 Meg.	Br.-Grn.-Blue AVC Network
19	3.3 Meg.	¼	RC1H68	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
20	68Ω	¼	RC1H10	BW-½-68	Blue-Gray-Blk. IF Cathode-Note 1
21	100Ω	¼	RC1H12	BW-½-100	Br.-Blk.-Br. IF Decoupling
22	4.7 Meg.	¼	RC1H70	BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Grid
23	220KΩ	¼	RC1H54	BTS-220K	Red-Red-Yl. AF Plate Load
24	470KΩ	¼	RC1H58	BTS-470K	Yl.-Vi.-Yl. Output Grid
25	150Ω	1	RW1B28	BW-1-150	Br.-Grn.-Br. Output Cathode
26	1500Ω	2	RC4G26	BT-2-1500	Br.-Grn.-Red Filter
27	200Ω	1	RW1B31	BW-1-220	Red-Blk.-Br. "
28	220KΩ	¼	RC1H54	BTS-220K	Red-Red-Yl. Line Isolation

Note 1 - Not used in later production.

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: BENDIX PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
29	1540Ω	3.2Ω	142Ω	.6Ω	TA0000	A-3876*	T22S45*	A-2928*	*Bend mounting tabs down, file out slots and mount on original bracket.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: BENDIX PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.		ST-113†		†Fabricate new mounting bracket.
30	PM	3.2Ω	SP4R00	Mod. P4-X		
	CONE DIA.	VC DIA.				
31	4"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

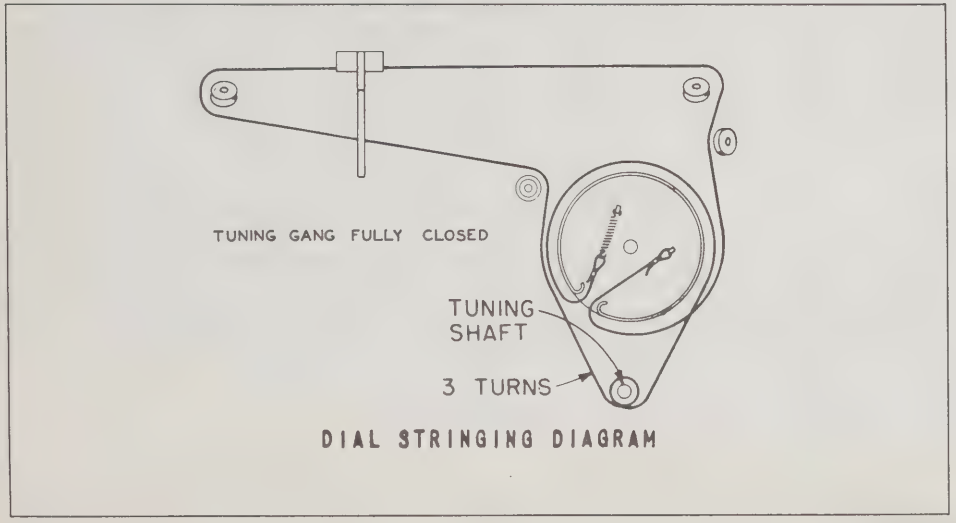
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: BENDIX PART No.	MEISSNER PART No.	
32	Loop Ant.	.2Ω	1.7Ω	AL0C04		
33	Osc. Coil	.7Ω	6Ω	L05B02	14-1040	
34	Input IF	22Ω	22Ω	TI0C00	16-6658	
35	Output IF	23Ω	23Ω	TI0D07	16-6660	Add 100 MMFD from high side of volume control to B-.

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: BENDIX PART No.		INSTALLATION NOTES
36	Bayonet	6-8	0.15A	Brown	#47		Type 47 (Some models use Type 44)

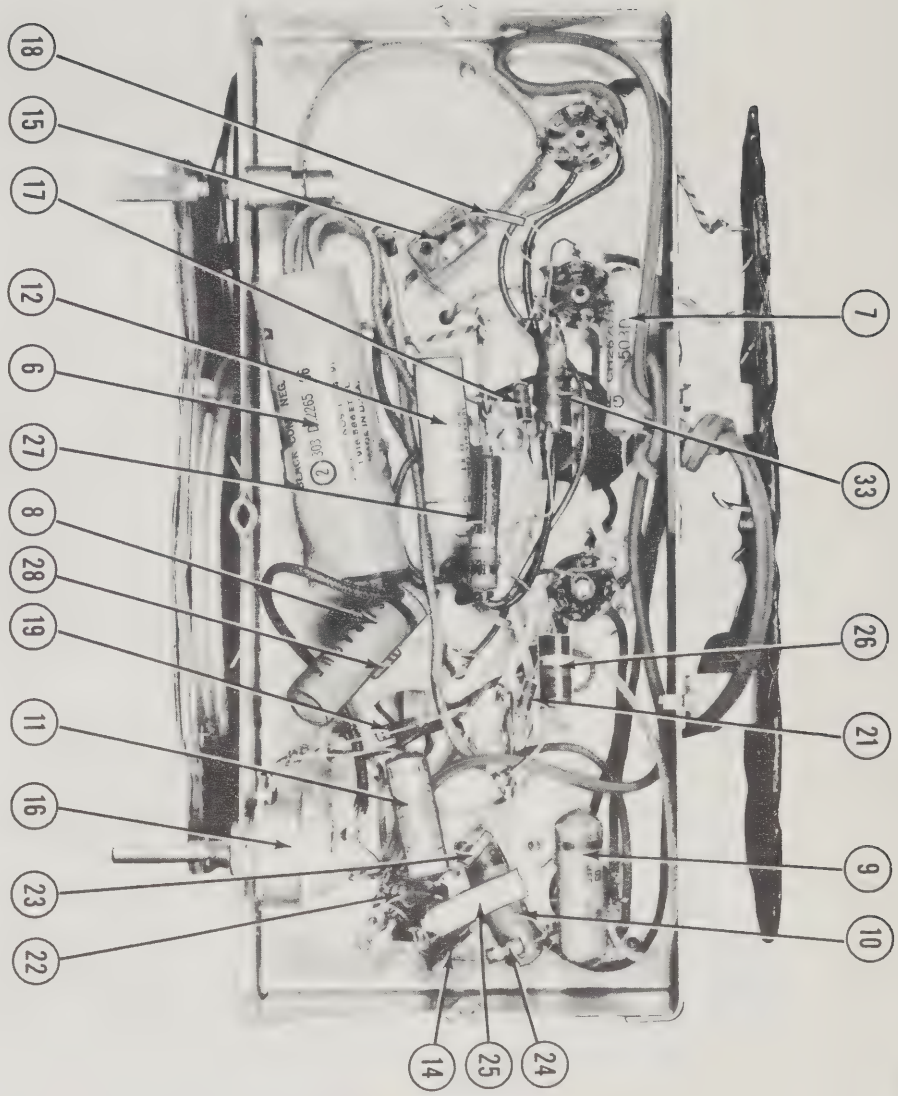
MISCELLANEOUS

ITEM No.	PART NAME	BENDIX PART No.	NOTES
37	2 Gang Var. Cap	CV0B03	(28-464MMF, 37-222 MMF)
	Dial	DS0A13	Glass (Model 526MC)
	"	DS0A11	Plastic (Model 526MA)
	"	DS0A12	" (Model 526MB



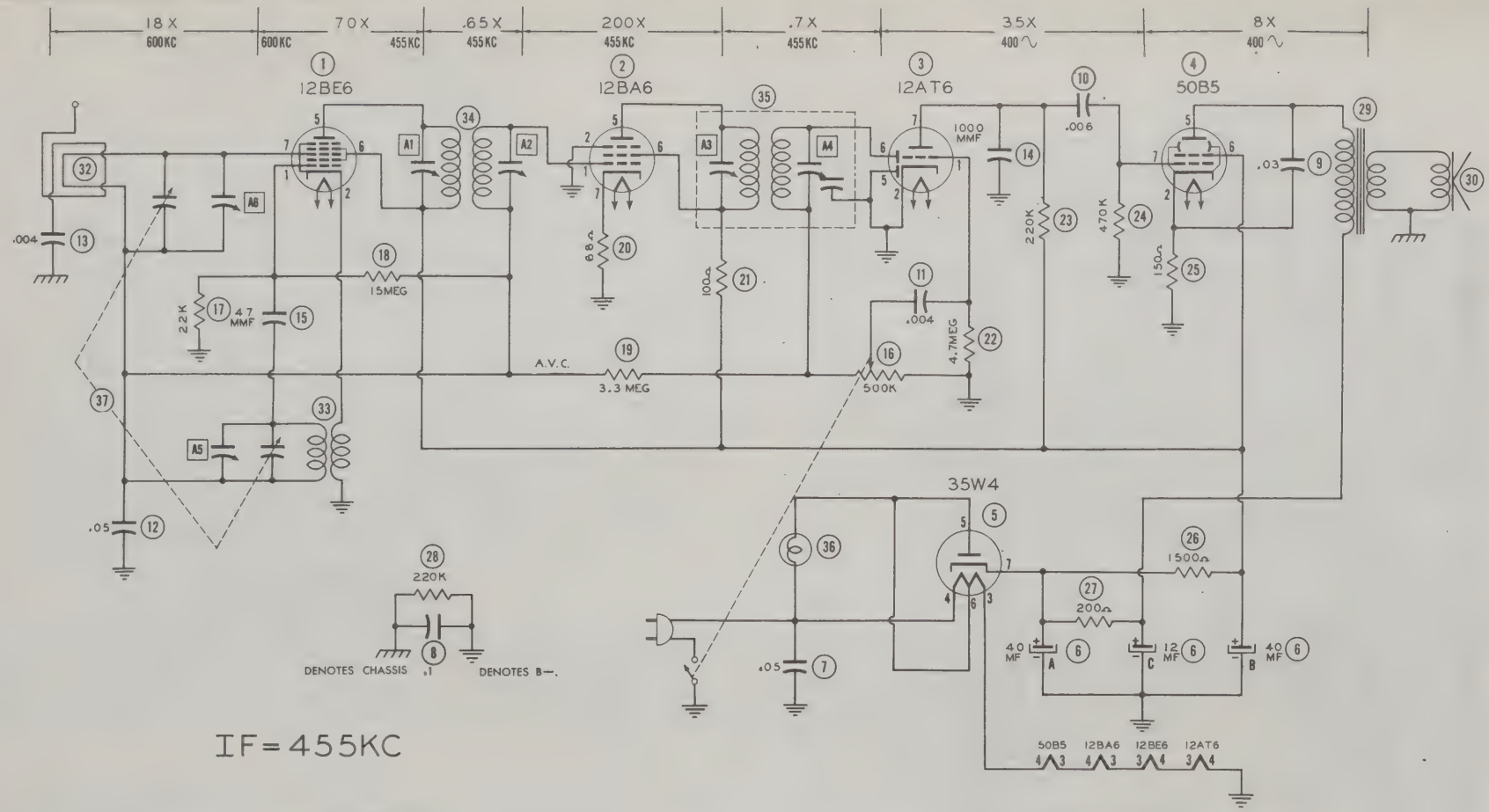
DIAL STRINGING DIAGRAM

CHASSIS—BOTTOM VIEW



DATE 12/47 SEC #4719-3 FOLDER #4719-3

BENDIX MODELS 526MA, 526MB, 526MC



IF=455KC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	12BE6	-3.7VDC§	0V.	25VAC	12VAC	87VDC	87VDC	-.6VDC
2	12BA6	-.6VDC	0V.	25VAC	38VAC	86VDC	86VDC	0V.
3	12AT6	-.7VDC	0V.	12VAC	0V.	0V.	-.5VDC	48VDC
4	50B5	0V.	5.2VDC	38VAC	87VAC	115VDC	88VDC	0V.
5	35W4	0V.	0V.	87VAC	117VAC	113VAC	113VAC	125VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	12BE6	22KΩ	.6Ω	24Ω	12Ω	35KΩ	35KΩ	2.8 Meg.
2	12BA6	2.8 Meg.	0Ω	24Ω	35Ω	35KΩ	35KΩ	0Ω
3	12AT6	5 Meg.	0Ω	12Ω	0Ω	0Ω	520KΩ	255KΩ
4	50B5	500KΩ	150Ω	35Ω	87Ω	35KΩ	35KΩ	500KΩ
5	35W4	INF.	INF.	87Ω	118Ω	115Ω	115Ω	35KΩ

§TAKEN WITH VACUUM TUBE VOLTMETER.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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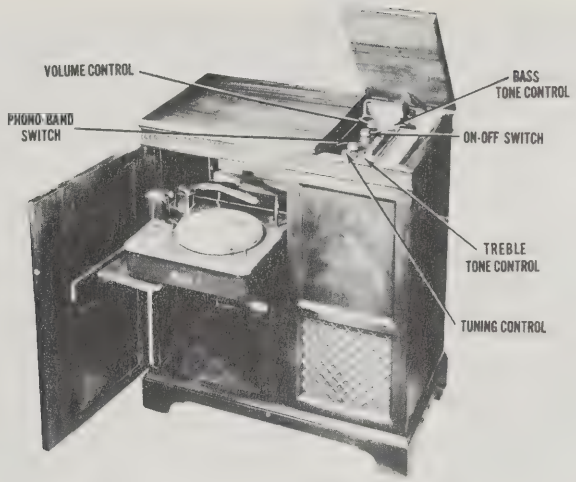
4719-3

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



BENDIX MODEL 1217B

TRADE NAME	Bendix, Model 1217, 1217B, 1217D
MANUFACTURER	Bendix Radio, Div. of Bendix Aviation Corp., Baltimore, Md.
TYPE SET	AC Operated Combination Phono-Radio FM-AM Superheterodyne with Loop Antenna
TUBES (TWELVE)	Types, 6AG5 RF Amp., 7F8 FM Converter, 6BE6 AM Converter, 7AH7 1st IF Amp., 7AH7 2nd IF Amp., 6H6 Det.-AVC, 6H6 FM Det., 6SN7GT 1st AF Amp., 6SN7GT Phase Inv., (2) 6V6GT Power Output, 5U4G Rectifier.
POWER SUPPLY	110-120 Volts AC — RATING 1.10 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1620KC — SHORT WAVE 5.7-16MC FREQ.MOD. 88-108MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The AM calibration marks are at the bottom of the dial glass
Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.05 MFD.	High side to center "AM" stator of tuning cap. Low side to chassis.	455KC	BC (1 position counter-clock-wise)	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output
2	Connect 3.7 micro-henry choke across loop jacks.	High side through .01 MFD cap. to loop jack, (with yellow lead). Low side to loop jack (with green lead).	580KC	"	580KC	"	A5	" " " "
3	"	"	1475KC	"	1475KC	"	A6,A7, A8	" " " "
4	"	"	580KC	"	Tune for maximum output.	"	A5	Rock tuning cap. and adjust for maximum output. Repeat Steps 3 and 4 until no further increase in output can be obtained. Check calibration at 580 and 965KC. If not within limits "knife" plates of tuning cap.
5	400Ω carbon res.	High side to blue lead of FM ant. socket. Low side to chassis.	15MC	SW (fully clock-wise)	15MC	"	A9	Adjust for maximum output. Tune signal generator to 14.1MC. If no signal is heard A9 is adjusted correctly. If a signal is heard retune signal generator to 15MC and loosen A9 until next peak is heard. Adjust for maximum output and re recheck for image.
6	"	"	"	"	Tune for maximum output.	"	A10, A11.	Rock tuning cap. and adjust for maximum output.

FOR FM ALIGNMENT SEE REAR PAGE

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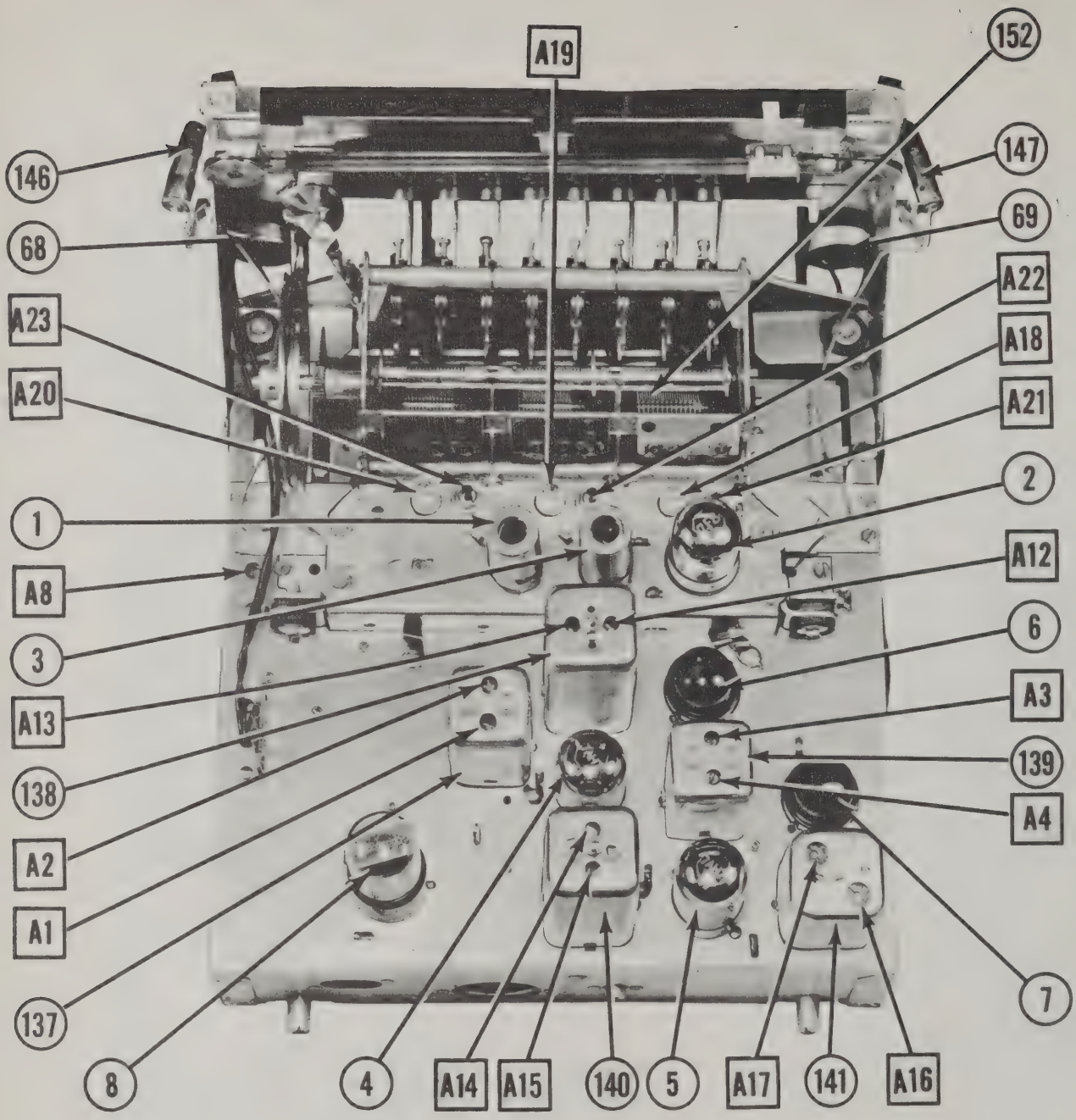
DATE 12/47 SET #29 FOLDER #4719

BENDIX MODELS
1217, 1217B, 1217D


A19
152
146
147
68
69
A23
A22
A20
A18
A21
1
2
A8
A12
3
6
A13
A3
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A4
A2
A1
137
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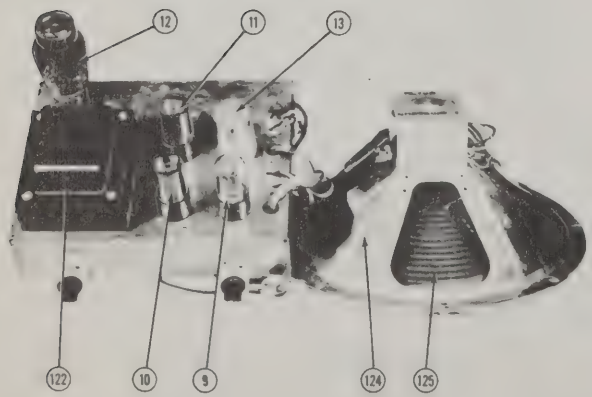
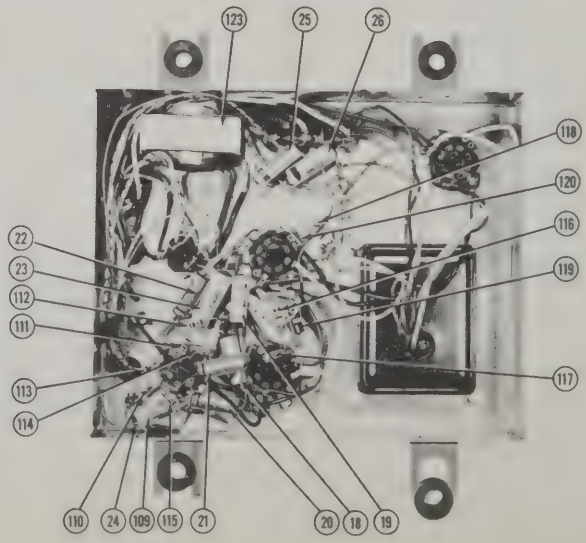
4
A14
A15
140
5
A17
141
A16


12
11
13
122
10
9
124
125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25
26
118
120
116
22
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119
112
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113
114
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115
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18
19

A11
A7
A10
A5
A9
A6

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: BENDIX PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6AG5	6AG5	7BD	
2	FM Converter	7F8	7F8	8BW	
3	AM Converter	6BE6	6BE6	7CH	
4	1st IF Amp.	7AH7	7AH7	8V	
5	2nd IF Amp.	7AH7	7AH7	8V	
6	Det.-AVC	6H6	6H6	7Q	
7	FM Det.	6H6	6H6	7Q	
8A	1st AF Amp.	6SN7GT	6SN7GT	8BD	Used in Issue "B"
B	1st AF Amp.	6J5	6J5	6Q	
9	Phase Inv.	6SN7GT	6SN7GT	8BD	
10	Power Output	6V6GT	6V6GT	7AC	
11	" "	6V6GT	6V6GT	7AC	
12	Rectifier	5U4-G	5U4-G	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: BENDIX PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
13A	20	450	CB2A02	FP234	DY-2x20-450	EL-220	AF44J4A†	UP6BJ38	▲ Filter
B	20	450							▲ "
14A	16	450	CBD00	2S569	Dh-816X450SS	UT-816	PRSA450-8-16	EZ5816	Decoupling - Red
B	8	450							" - Blue
15	20	25	CE1T02	TC26	M-25-25	TA-25	PRS25-25	BR202A	Cathode Bypass
16	20	25	CE1T02	TC26	M-25-25	TA-25	PRS25-25	BR202A	DAVC Bias Network
17	3	50	CB1D00	TC40	M-4-150	TA-55	PRS150-4	BR550	Ratio Detector Bias Net
18	.01	400	CP4T31	TP421	S-4-01	TC-11	484-01	DT4S1	Output Plate Bypass
19	.01	400	CP4T31	TP421	S-4-01	TC-11	484-01	DT4S1	" " "
20	.006	600	CP4T20	TP409	S-6-006	TC-26	684-006	DT6D6	Feedback
21	.006	400	CP4T20	TP409	S-6-006	TC-26	484-006	DT6D6	Audio Coupling
22	.006	400	CP4T20	TP409	S-6-006	TC-26	484-006	DT6D6	" "
23	.1	400	CP4T51	TP428	S-4-1	TC-1	484-.1	DT4P1	Hum Neutralization
24	.05	200	CP2T40	TP426	S-4-05	TC-15	484-05	DT4S5	AF Cathode Bypass
25	.01	400	CP4T31	TP421	S-4-01	TC-11	484-01	DT4S1	Line Filter
26	.01	400	CP4T31	TP421	S-4-01	TC-11	484-01	DT4S1	" "
27	.006	400	CP4T20	TP409	S-6-006	TC-26	484-006	DT6D6	Audio Coupling
28	.01	400	CP4M31	TP421	S-4-01	TC-11	484-01	DT4S1	Decoupling
29	.02	400	CP4T34	TP423	S-4-02	TC-12	484-02	DT4S2	Tone Comp.
30	.002	600	CP6T12	TP405	S-6-002	TC-22	684-002	DT6D2	" "
31	.006	400	CP4T20	TP409	S-6-006	TC-26	484-006	DT6D6	Audio Coupling
32	.01	400	CP4M31	TP421	S-4-01	TC-11	484-01	DT4S1	2nd IF Screen Bypass
33	.01	400	CP4M31	TP421	S-4-01	TC-11	484-01	DT4S1	2nd IF Decoupling
34	.01	400	CP4M31	TP421	S-4-01	TC-11	484-01	DT4S1	AVC Filter
35	.05	200	CP2T40	TP426	S-4-05	TC-15	484-05	DT4S5	2nd IF Grid Filter
36	.01	400	CP4M31	TP421	S-4-01	TC-11	484-01	DT4S1	1st IF Screen Bypass
37	.01	200	CP0M31	TP421	S-4-01	TC-11	484-01	DT4S1	AVC Filter
38	.01	400	CP4T31	TP421	S-4-01	TC-11	484-01	DT4S1	AM Conv. Screen Bypass
39	.01	400	CP4T31	TP421	S-4-01	TC-11	484-01	DT4S1	AM Conv. Decoup.
40	.01	400	CP4M31	TP421	S-4-01	TC-11	484-01	DT4S1	FM Conv. Decoup.
41	.01	120	CP0M31	TP421	S-4-01	TC-11	484-01	DT4S1	AVC Filter
42	.01	400	CP4M31	TP421	S-4-01	TC-11	484-01	DT4S1	RF Plate Decoup.
43	.01	400	CP4M31	TP421	S-4-01	TC-11	484-01	DT4S1	RF Screen Bypass
44	.006	400	CP4T20	TP409	S-6-006	TC-26	484-006	DT6D6	Audio Coupling
45	.01	200	CP0M31	TP421	S-4-01	TC-11	484-01	DT4S1	2nd IF Cathode Bypass
46	4700	300	CM5E73	MC465	MO.5-247	1FM-25	1467-005	1D5D5	Ratio Det. Fil. Bypass
47	330	500	CM5A34	MC241	MO.5-330	1FM-335	1468-00035	5W5T3	FM Diode Load Cap.
48	330	500	CM5A34	MC241	MO.5-330	1FM-335	1468-00035	5W5T3	FM Diode Load Cap.
49	2000	300	CM5L02	MC457	MW.5-22	1FM-22	1467-002	1W5D2	RF Filter
50	150	500	CM5A26	MC236	MO.5-315	1FM-315	1468-00015	5W5T15	De-emphasis
51	150	500	CM5A26	MC236	MO.5-315	1FM-315	1468-00015	5W5T15	AVC Filter
52	1000		CM5E73	MC255	MO.3-21	1FM-21	1467-001	1W5D1	FM Converter Decoup.
53	100	500	CM6L22	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	RF Coupling
54	47	500	CC8B30	MC225	MO.5-447	1FM-45	1468-00005	5W5Q5	AM Osc. Grid Cap.
55	1.5		CC9A12						FM Conv. Plate Bypass
56	470	500	CM5A38	MC245	MO.5-347	1FM-35	1468-0005	5W5T5	FM Osc. Coupling
57	15		CC0B24						FM Osc. Feedback
58	5		CC7B19						Fixed Trimmer
59	33		CC8B28						FM Osc. Grid
60	47		CC8B30						RF Coup.
61	12		CC0B23						" "
62	4.7		CC9A18						" "

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: BENDIX PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
119	200Ω	2	RC4D16	BW-2-220	Red-Blk.-Br. Output Cathode
120	10Ω	½	RC2H00	BW-½-10	Br.-Blk.-Blk. Series Pilot Light
121	10KΩ	1	RC3H36	BTA-10K	Br.-Blk.-Or. Decoupling
153	2200Ω	½	RC1H28	BTS-2200	Red-Red-Red FM Conv. Cathode
154	4700Ω	½	RC2H32	BTS-4700	Yl.-vi.-Red FM Conv. Plate

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	RATING: SEC. 4	REPLACEMENT DATA: BENDIX PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDARSON PART No.	REPLACEMENT DATA: MERIT PART No.
122	117V AC @ .56A	630V CT @ .138A	5.0V AC @ 3.0A	6.3V AC @ 4.2A	6.4V AC @ .3A	TP0R00	P-6314 P-6134‡	T-22R06* T-21F08‡	P-2955# P-2944‡

*Use universal mounting brackets. ‡Drill new mounting holes.
#Add series resistor to reduce plate voltage.

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: BENDIX PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDAR'N PART No.	REPLACEMENT DATA: MERIT PART No.	INSTALLATION NOTES
123	7000Ω	3.1Ω	400Ω	.4Ω	TA0900	A-3824	T22558	A-2935	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: BENDIX PART No.	REPLACEMENT DATA: JENSEN PART No.	REPLACEMENT DATA:	INSTALLATION NOTES
	FIELD RES.	VC IMP.				
124	380Ω	3.1Ω	SE2B00			
	CONE DIA.	VC DIA.				
125	11-5/8"	1-1/4"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: BENDIX PART No.	REPLACEMENT DATA: MEISSNER PART No.
126	Loop Ant.		1Ω	BZ0B06	
127	FM Ant.				
128	BC Ant.Coil	39Ω	1Ω	LT0A00	
129	SW Ant.Coil	1.3Ω	.1Ω	TR1H00	14-1044
130	FM Ant.Coil	0Ω	0Ω	LA0F00	
131	BC RF Coil	70Ω	3.5Ω	TR1L00	14-1027
132	SW RF Coil	9Ω	.1Ω	TR1C00	14-1045
133	FM RF Coil		0Ω	LI0F00	
134	BC Osc.Coil	.3Ω	7.5Ω	L01B01	14-1040
135	SW Osc.Coil		0Ω	L01C00	14-1046
136	FM Osc.Coil		0Ω	L01F00	
137	AM Input IF	9Ω	9Ω		16-6658
138	FM Input IF	1Ω	.8Ω	TI0C07	
139	AM OutputIF	9Ω		TI0C07	16-6670
140	FM 2nd IF	2Ω	1Ω	TI0I01	
141	FM Disc.	1.2Ω	2.5Ω	TI0D10	
142	RF Choke		.1Ω	LF0A03	
143	" "		.1Ω	LF0A02	
144	" "		.1Ω	LF0A02	
145	" "		.9Ω		

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: BENDIX PART No.	REPLACEMENT DATA:	INSTALLATION NOTES
146&147	Bayonet	6-8	0.25	Blue	#44		Type 44
148	"	6-8	0.15	Brown	#47		Type 47

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	BENDIX PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	
63	150	500	CM5A26	MC236	MO.5-315	1FM-315	1468-00015	5W5T15	Fixed Trimmer
64	100	500	CM6L22	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	RF Coup.
65	150	500	CM5A26	MC236	MO.5-315	1FM-315	1468-00015	5W5T15	Fixed Trimmer
66	150	500	CM5A26	MC236	MO.5-315	1FM-315	1468-00015	5W5T15	AF Plate Bypass

†Do not use bypass section.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	BENDIX PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
67A	2 Meg.	½	RV4C01	TM251	D18-139X	AT-116	Volume Control
B	Shaft		Not Req.	SS1	A & 442	RS-5	Attach to 67A per instructions
68A	50KΩ	½	RV0C00	MR33	D13-123	M-46-Z	Treble Control
B	Shaft		Not Req.	Not Req	A	Not Req.	Attach to 68A per instructions
69A	1 Meg.	½	RV4C02	MR53	D13-137	M-63-Z	Bass Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 69A per instructions

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	BENDIX PART No.	IRC PART No.	
70	4.7 Meg.	¼		BTS-4.7 Meg.	Yl.-Vi.-Grn. RF Grid
71	120KΩ	½	RC2G52	BTS-120K	Br.-Red-Yl. RF Screen Dropping
72	4700Ω	½	RC2H32	BTS-4700	Yl.-Vi.-Red RF Plate Decoupling
73	4.7 Meg.	¼		BTS-4.7 Meg.	Yl.-Vi.-Grn. RF Grid
74	470KΩ	¼	RC1H58	BTS-470K	Yl.-Vi.-Yl. FM Converter Grid
75	22KΩ	¼	RC1G40	BTS-22K	Red-Red-Or. FM Oscillator Grid
76	100Ω	¼	RC1H12	BW-½-100	Br.-Blk.-Br. Parasitic Suppressor
77	150Ω	¼	RC1G14	BW-½-150	Br.-Grn.-Br. " "
78	1.5 Meg.	¼	RC1H64	BTS-1.5 Meg.	Br.-Grn.-Grn. AM Converter Grid
79	22KΩ	¼	RC1G40	BTS-22K	Red-Red-Or. AM Oscillator Grid
80	4.7 Meg.	¼		BTS-4.7 Meg.	Yl.-Vi.-Grn. AVC Network
81	47KΩ	¼	RC1H44	BTS-47K	Yl.-Vi.-Or. FM Converter Decoupling
82	1.5 Meg.	¼	RC1H64	BTS-1.5 Meg.	Br.-Grn.-Grn. AVC Network
83	4700Ω	½	RC2H32	BTS-4700	Yl.-Vi.-Red AM Converter Screen Dropping
84	27KΩ	½	RC2G41	BTS-27K	Red-Vi.-Or. AM Converter Screen Bleeder
85	47Ω	¼	RC1G08	BW-½-47	Yl.-Vi.-Blk. 1st IF Cathode
86	470KΩ	¼	RC1H58	BTS-470K	Yl.-Vi.-Yl. 2nd IF Grid
87	220KΩ	¼	RC1h54	BTS-220K	Red-Red-Yl. Diode Load
88	1.5 Meg.	¼	RC1H64	BTS-1.5 Meg.	Br.-Grn.-Grn. AVC Network
89	1000Ω	¼	RC1H24	BTS-1000	Br.-Blk.-Red 2nd IF Screen Dropping
90	6800Ω	1	RC3G34	BTA-6800	Blue-Gray-Or. 2nd IF Decoupling
91	220Ω	¼	RC1H16	BW-½-220	Red-Red-Br. 2nd IF Cathode
92	470KΩ	¼	RC1H58	BTS-470K	Yl.-Vi.-Yl. Phono Shunt
93	100KΩ	¼	RC1H51	BTS-100K	Br.-Blk.-Yl. Tone Compensation
94	15KΩ		RW0D38		Decoupling
95	220KΩ	¼	RC1H54	BTS-220K	Red-Red-Yl. DAVC Bias
96	1000Ω	¼	RC1G24	BTS-1000	Br.-Blk.-Red DAVC Bias
97	100KΩ	¼	RC1H51	BTS-100K	Br.-Blk.-Yl. De-emphasis
98	33KΩ	¼	RC1H42	BTS-33K	Or.-Or.-Or. Ratio Detector Bias Network
99	10KΩ	¼	RC1G35	BTS-10K	Br.-Blk.-Or. " " " "
100	470Ω	1	RC3H20	BTA-470	Yl.-Vi.-Br. Decoupling
101	2.2 Meg.	¼	RC1H66	BTS-2.2 Meg.	Red-Red-Grn. DAVC Network
102	1000Ω	¼	RC1H24	BTS-1000	Br.-Blk.-Red 2nd AF Cathode
103	47KΩ	¼	RC1H44	BTS-47K	Yl.-Vi.-Or. 2nd AF Plate Load
104	15KΩ	½	RC2H38	BTS-15K	Br.-Grn.-Or. 2nd AF Plate Decoupling
105	4700Ω	¼	RC2H32	BTS-4700	Yl.-Vi.-Red 1st AF Cathode
106	10KΩ	½	RC2H36	BTS-10K	Br.-Blk.-Or. 1st AF Cathode
107	1 Meg.	¼		BTS-1 Meg.	Br.-Blk.-Grn. 1st AF Grid
108	100KΩ	¼	RC1H51	BTS-100K	Br.-Blk.-Yl. 1st AF Plate Load
109	330KΩ	¼		BTS-330K	Or.-Or.-Yl. 3rd AF Grid
110	1000Ω	¼	RC1G24	BTS-1000	Br.-Blk.-Red 3rd AF Cathode
111	47KΩ	½	RC2G44	BTS-47K	Yl.-Vi.-Or. 3rd AF Plate Load
112	47KΩ	½	RC2G44	BTS-47K	Yl.-Vi.-Or. Phase Inverter Plate Load
113	1000Ω	¼	RC1G24	BTS-1000	Br.-Blk.-Red Phase Inverter Cathode
114	22KΩ	¼	RC1G40	BTS-22K	Red-Red-Or. Hum Neutralization
115	150KΩ	¼	RC1H55	BTS-150K	Br.-Grn.-Yl. Feedback
116	47KΩ	¼	RC1G44	BTS-47K	Yl.-Vi.-Or. Phase Inverter Grid
117	470KΩ	¼	RC1G58	BTS-470K	Yl.-Vi.-Yl. Output Grid
118	470KΩ	¼	RC1G58	BTS-470K	Yl.-Vi.-Yl. " "

DATE 12/47 SET #29 FOLDER #471-4

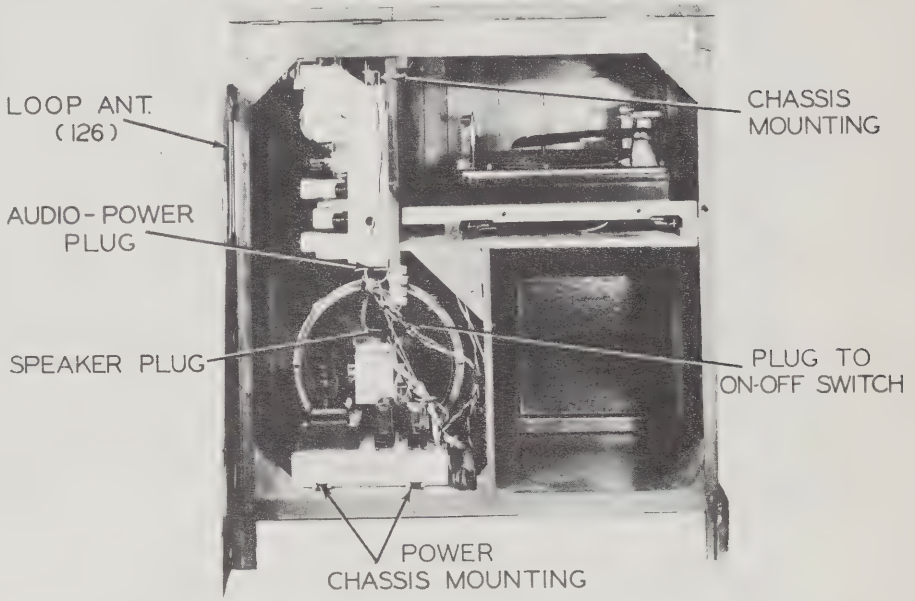
PARTS LIST AND DESCRIPTIONS (Continued)

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA		REMARKS
	BENDIX PART No.	ASTATIC PART No.	
149		L-71-S	

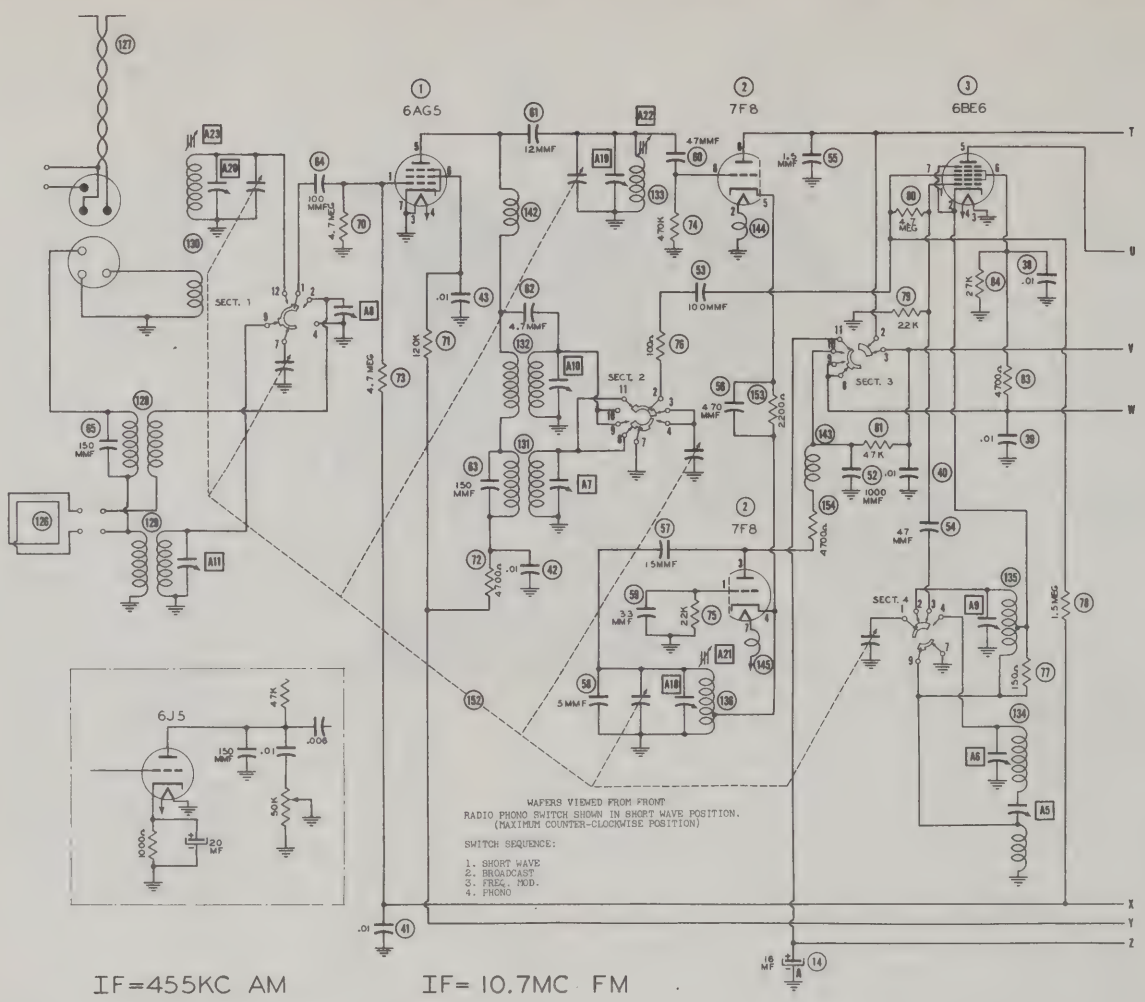
MISCELLANEOUS

ITEM No.	PART NAME	BENDIX PART No.	NOTES
150	Switch	SR4G00	Band-Phono
151	On-Off Switch	SR2L00	Rotary Snap (SPST)
152	Tuning Cap.	CV0E00	AM (16-495MMF, 16-495MMF, 16-350MMF)
A5	Padder	CT1A12	BC Osc. Adj.
A6	Trimmer	CT1A13	" "
A7	"	CT1A14	BC RF Adj.
A8	"	CT1A15	BC Ant. Adj.
A9	"	CT1A13	SW Osc. Adj.
A10	"	CT1A13	SW RF Adj.
A11	"	CT1A13	SW Ant. Adj.
A18	"	CT1B00	FM Osc. Adj.
A19	"	CT1B00	FM RF Adj.
A20	"	CT1B00	FM Ant. Adj.
	Dial	DS0E01	Glass



DISASSEMBLY INSTRUCTIONS

1. Remove six push-on type control knobs.
2. Remove twenty wood screws holding loop antenna to back of cabinet.
3. Remove loop antenna plugs from chassis. Remove loop antenna from cabinet.
4. Remove FM and external antenna plug from tuning chassis.
5. Remove power supply plug from tuning chassis.
6. Remove speaker plug from speaker.
7. Remove phono-pickup plug from tuning chassis.
8. Disconnect AC power plug going to switch on tuning chassis.
9. Remove phono-motor plug from socket on bottom of record changer.
10. Remove four bolts holding tuning chassis in cabinet. Remove from cabinet.
11. Remove four bolts holding power supply chassis in cabinet. Remove from cabinet.
12. Remove four hex nuts holding speaker in cabinet. Remove speaker from cabinet.



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6AG5	-.5VDC	0V.	0V.	6.3VAC	260VDC	88VDC	0V.	-
‡ 2	7F8	-2VDC§	0V.	135VDC	0V.	2.2VDC	130VDC	6.3VAC	0V.
3	6BE6	-8VDC§	0V.	0V.	6.3VAC	152VDC	100VDC	-.3VDC	-
4	7AH7	0V.	220VDC	220VDC	0V.	0V.	.5VDC	.4VDC	6.3VAC
‡ 5	7AH7	0V.	225VDC	225VDC	0V.	0V.	0V.	1.8VDC	6.3VAC
6	6H6	0V.	6.3VAC	-.1VDC	0V.	-.5VDC	0V.	0V.	0V.
‡ 7	6H6	0V.	20VDC*	16VDC	16VDC	14VDC	15VDC	20VDC*	15VDC
8	6SN7GT	1VDC	122VDC	17VDC	0V.	88VDC	2.6VDC	6.3VAC	0V.
9	6SN7GT	0V.	106VDC	3.2VDC	0V.	118VDC	3.4VDC	6.3VAC	0V.
10	6V6GT	0V.	0V.	285VDC	290VDC	0V.	0V.	6.3VAC	20VDC
11	6V6GT	0V.	0V.	285VDC	290VDC	0V.	1.4VAC	6.3VAC	20VDC
12	5U4G	0V.	320VDC	0V.	315VAC	0V.	315VAC	0V.	320VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6AG5	2.5 Meg.	0Ω	0Ω	.1Ω	55KΩ	170KΩ	0Ω	-
‡ 2	7F8	22KΩ	.1Ω	60KΩ	0Ω	2KΩ	105KΩ	.2Ω	470KΩ
3	6BE6	22KΩ	.6Ω	0Ω	.1Ω	55KΩ	2.8MΩ	1 Meg.	-
4	7AH7	0Ω	50KΩ	50KΩ	0Ω	0Ω	3.2 Meg.	1Ω	.1Ω
‡ 5	7AH7	0Ω	47KΩ	48KΩ	0Ω	0Ω	500KΩ	220Ω	.1Ω
6	6H6	0Ω	.1Ω	2.2 Meg.	0Ω	250KΩ	0Ω	0Ω	0Ω
‡ 7	6H6	0Ω	155KΩ	INF.	11KΩ	43KΩ	10KΩ	210Ω	INF.
8	6SN7GT	1.2 Meg.	200KΩ	15KΩ	1.7 Meg.	100KΩ	1KΩ	.1Ω	0Ω
9	6SN7GT	290KΩ	90KΩ	1KΩ	50KΩ	90KΩ	1KΩ	.1Ω	0Ω
10	6V6GT	0Ω	0Ω	40KΩ	40KΩ	550KΩ	50KΩ	.1Ω	210Ω
11	6V6GT	0Ω	0Ω	40KΩ	40KΩ	470KΩ	5Ω	.1Ω	210Ω
12	5U4G	0Ω	40KΩ	INF.	46Ω	INF.	50Ω	INF.	46KΩ

VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

§TAKEN WITH VACUUM TUBE VOLTMETER.

*MEASURE 6.4V AC BETWEEN FILAMENT PINS.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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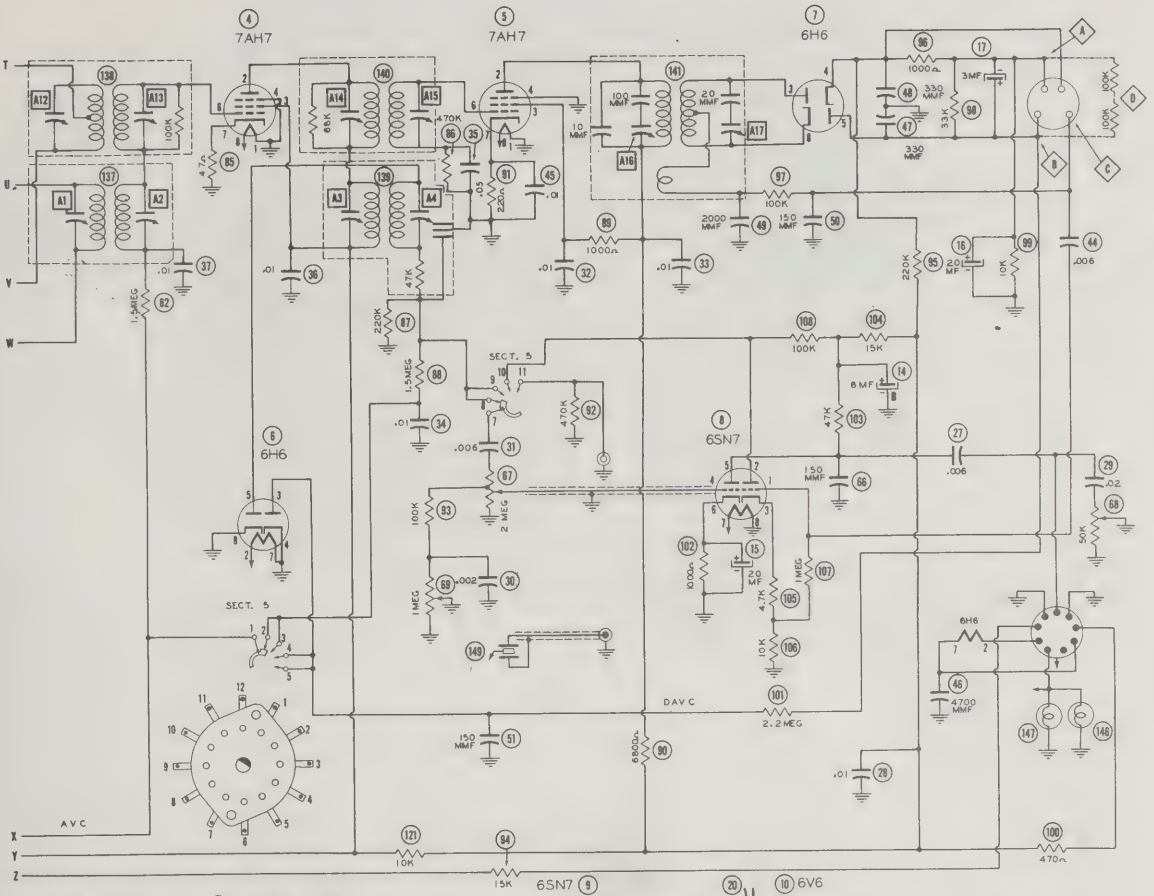
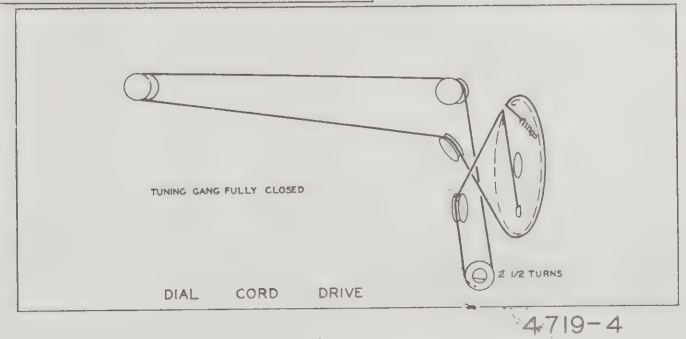
4719-4

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.



STAGE GAIN MEASUREMENTS		
ANT. TO RF GRID	10X	600KC
RF GRID TO CONV. GRID	10X	600KC
CONV. GAIN	45X	IN 600KC OUT 455KC
1st IF TRANS.	.75X	455KC
IF TUBE	250X	455KC
2nd IF TRANS.	.85X	455KC
1st AUDIO	10X	400~
2nd AUDIO	5X	400~
OUTPUT	14X	400~



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4719-4

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

FM ALIGNMENT

FM Dummy antenna consists of 300Ω resistor in series with 30Ω resistor with a .01 MFD. capacitor connected to junction of the 300Ω and 30Ω resistors. The 300Ω resistor is connected to the ungrounded side of the 300Ω coaxial lead at the FM Ant. socket. The 30Ω resistor is connected to chassis. The 30Ω resistor may be varied to match the output impedance of the signal generator.

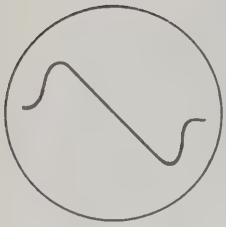


Fig. 1

Fig. 2

FM ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Frequency modulate the signal with 60∿, 450KC sweep. Connect the synchronized sweep voltage from the signal generator to the horizontal amplifier. The horizontal sweep voltage may be taken from power line if signal generator does not have a sync. voltage output. There may be some phase shift encountered between signal generator and scope horizontal sweep resulting in a double trace pattern per Fig. 2. IF provision is made for this in the scope rotate phase control until the two curves coincide as in Fig. 1. If no provision is made for this the same thing may be accomplished by inserting a capacitor of suitable value (.01to .1 MFD) in series with the horizontal sweep input.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7	.05 MFD.	High side to center "FM" stator of tuning cap. Low side to chassis.	10.7MC (unmodulated)	FM (1st position clockwise)	Tuning cap. fully open.	DC probe of VTVM connected to Point A. Common lead to Point B.	A12,A13 A14,A15, A16	Connect a short from extreme left "FM" stator of tuning cap. to chassis. Adjust for maximum deflection in order given and repeat.
						CONNECT SCOPE		
8	.05 MFD	High side to center "FM" stator of tuning cap. Low side to chassis.	Approx. 10.7MC (freq. modulated. Adjust signal gen. until curve of Figure 1 is centered on horizontal scope sweep line.	FM (1st position clockwise)	Tuning cap. fully open.	Vertical amplifier to Point C. Ground to chassis	A17	Adjust for maximum symmetry per curve of Fig. 1. It may be necessary to adjust alternately A16 and A17 to obtain best possible curve.
9	F. Dummy Ant. (See prealignment notes.)	High side to .01 MFD. cap. of dummy. Low side to chassis.	106MC (freq. modulated)	"	106MC	"	A18	Remove short from "FM" stator from Step 7 and adjust until "S" curve is centered on horizontal sweep scope line. Check for image by tuning sig. gen. to 84.6MC. If signal is not heard then A18 is adjusted correctly. If signal is heard retune sig. gen. to 106MC and loosen trimmer until next peak is obtained. Then adjust until "S" curve is centered on horizontal sweep scope line and recheck for image.
10	"	"	"	"	"	"	A19, A20	Rock tuning cap. to keep "S" curve centered on horizontal sweep scope line while adjusting A19 and A20 for maximum height of curve.
11	"	"	90MC	"	90MC	"	A21	Adjust until "S" curve is centered on horizontal scope sweep line.
12	"	"	"	"	"	"	A22, A23	Adjust A22, A23 for maximum height of curve. Repeat Steps 9, 10, 11 & 12 until no further improvement can be made.

FM ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

The VTVM must not be AC-DC or with ground connected to AC line or through resistor.
The values of the two 100KΩ resistors in Step 8 should be within 1% of each other.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7	.01 MFD.	High side to center "FM" stator of tuning cap. Low side to chassis.	10.7MC (unmodulated)	FM	Tuning cap. fully open.	DC probe of VTVM connected to Point A. Common lead to Point B.	A12,A13 A14,A15 A16	Connect a short from extreme left "FM" stator of tuning cap. to chassis. Adjust for maximum deflection in order given and repeat.
8	.01 MFD.	"	"	"	"	Connect two 100KΩ resistors as shown on schematic. DC probe to point C. Common lead to Point D.	A17	If available use zero center scale VTVM. Adjust for zero deflection. Repeat Step 7, adjusting A16 only, for maximum deflection and Step 8 adjusting A7 for zero deflection several times to assure correct alignment.
9	FM Dummy (See prealignment notes)	High side to .01 MFD cap. of dummy. Low side to chassis.	106MC (amplitude modulated)	"	106MC	DC probe of VTVM connected to Point A. Common lead to Point B.	A18	Remove short from FM stator of Step 13. Adjust for maximum deflection. Check for image as described in Step 9 under visual alignment.
10	"	"	"	"	Tune for maximum deflection.	"	A19,A20	Rock tuning cap. and adjust for maximum deflection.
11	"	"	90MC	"	90MC	"	A21, A22, A23.	Adjust for maximum deflection. Repeat Steps 9, 10 and 11 until no further increase in deflection can be obtained.

PUSHBUTTON ADJUSTMENTS

1. Turn receiver on and allow it to warm up for about 15 minutes.
2. Remove pushbuttons by pulling out, and loosen set screws behind buttons.
3. Manually tune in desired station and push any button shaft in completely.
4. Holding shaft in tighten set screw firmly.
5. Check accuracy of setting by detuning with manual control and retuning with button shaft. If setting is off repeat Steps 2, 3, 4 and 5.
6. To set up the remaining buttons follow the same procedure as outlined above.
7. Replace pushbuttons.

FOR AM ALIGNMENT SEE FRONT PAGE

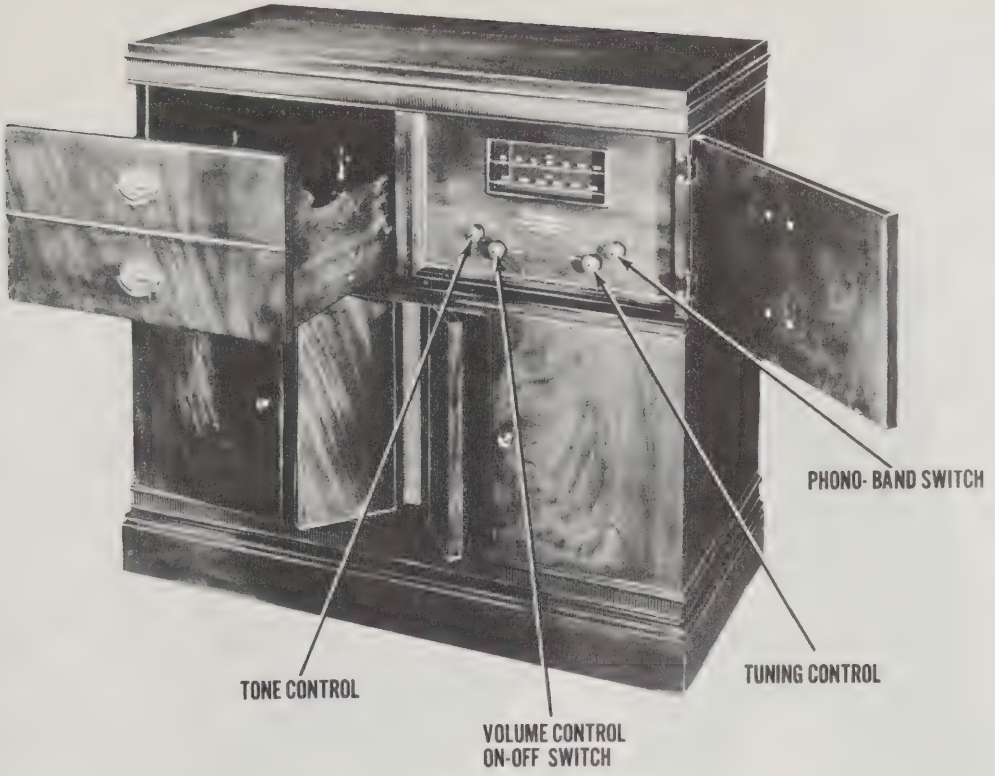
PHOTOFACT* Folder

*TRADE MARK

BRUNSWICK MODELS T-4000 "Buckingham," T-4000½ "Buckingham," D-6876 "Plymouth."

BRUNSWICK MODELS T-4000 "Buckingham," T-4000½ "Buckingham," D-6876 "Plymouth."

BRUNSWICK MODELS T-4000 "Buckingham," T-4000½ "Buckingham," D-6876 "Plymouth." PAGE 1



TRADE NAME	Brunswick, Models T-4000 "Buckingham", T-4000½ "Buckingham", D-6876 "Plymouth"
SUPPLIER	Radio & Television, Inc., 244 Madison Ave., New York 16, N.Y.
TYPE SET	AC Operated Phono-Radio Combination AM-FM Superheterodyne Receiver with Self Contained Loop Antenna
TUBES (TEN)	Types, 6AG5 FM RF Amp., 6SB7Y FM Conv., 6SG7 AM RF-FM 1st IF, 6SA7 AM Converter, 6SF7 AM IF-Det.-AVC-FM 2nd IF, 6H6 FM Det.-AVC, 6SL7GT 1st Audio Amp.-Phase Inv., (2)6V6GT Power Output, 5Y3GT Rectifier.
POWER SUPPLY	105-125 Volts AC RATING .640 Amp. @ 117V AC
TUNING RANGE - BROADCAST	540-1620KC FREQ. MOD. 87.5 - 108MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low freq. end of dial.

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

Never adjust AM-IF transformers without rechecking FM-IF alignment.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	200MMFD	High side to blue lead from loop ant. socket. Low side to chassis.	455KC	BC (center position)	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output.
2	200MMFD	"	1600KC	"	1600KC	"	A5	" " " "
3	200MMFD	"	1500KC	"	Tune for maximum output.	"	A6	" " " "
4	200MMFD	"	600KC	"	"	"	A7	Rock tuning cap. and adjust for maximum output. Repeat Steps 2, 3 and 4 until no further increase in output can be obtained.

FOR FM ALIGNMENT SEE LAST PAGE OF THIS FOLDER.

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

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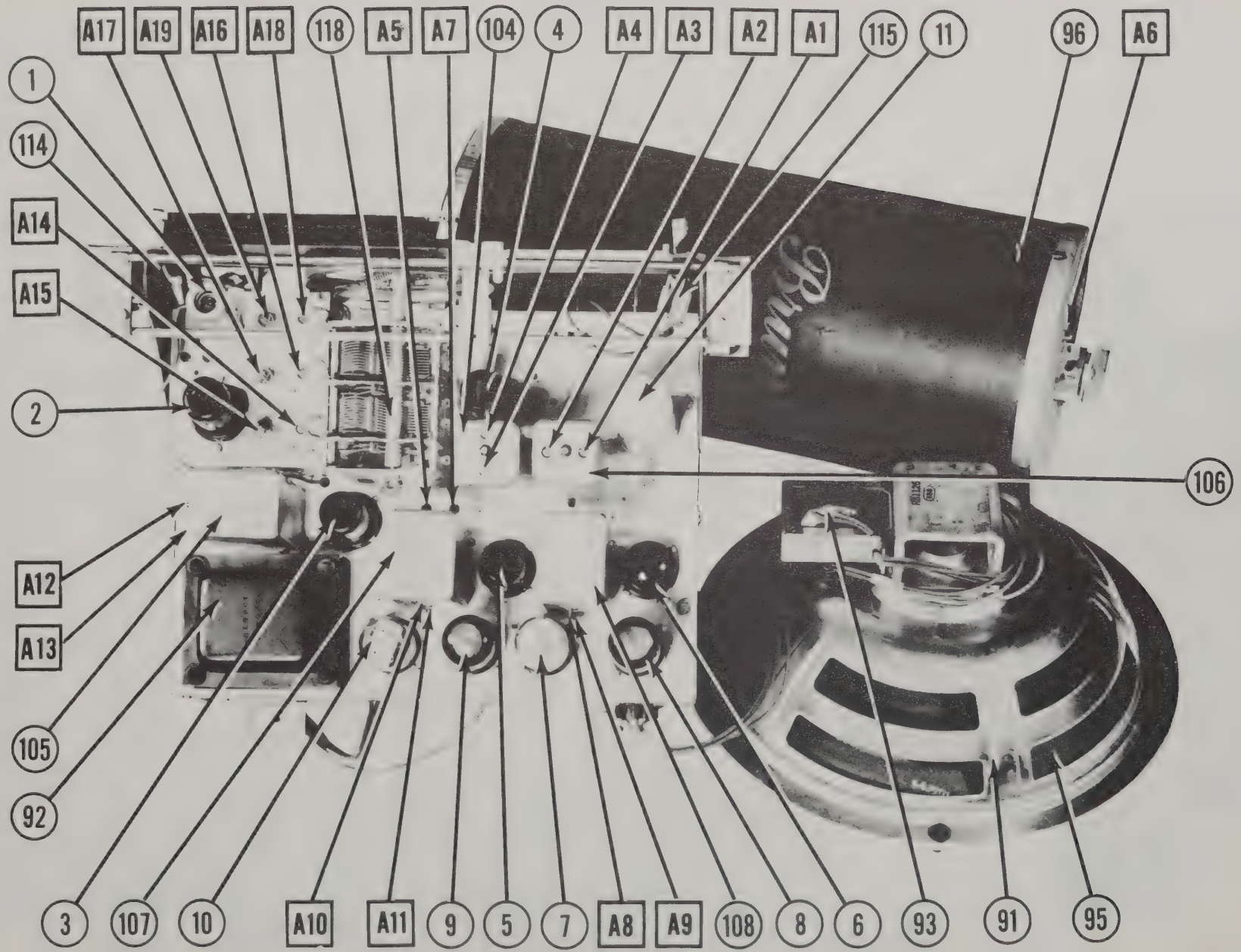
DATE 12/47 SET #29 FOLDER #4719-5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93
91
95

BRUNSWICK MODELS T-4000
"Buckingham," T-4000½ "Buckingham,"
D-6876 "Plymouth." PAGE 3

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: BRUNSWICK PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	FM RF Amp.	6AG5	6AG5	7BD	
2	FM Converter	6SB7Y	6SB7Y	8R	
3	AM RF-FM 1st IF	6SG7	6SG7	8BK	
4	AM Converter	6SA7	6SA7	8R	
5	AM IF-Det.-AVC-FM 2nd IF	6SF7	6SF7	7AZ	
6	FM Det.-AVC	6H6	6H6	7Q	
7	1st Audio Amp.-Phase Inv.	6SL7GT	6SL7GT	8BD	
8	Power Output	6V6GT	6V6GT	7AC	
9	Power Output	6V6GT	6V6GT	7AC	
10	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: BRUNSWICK PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
11A	30	450	25214	FP420	DY-403	EL-424	AF444J4A	UP9DJ53	◓ Filter
B	30	450							◙ "
C	20	450				UT-8			▲ "
D	20	25							Output Cathode Bypass
12	4	50	25136	TC40	M-4-150	TA-55	PRS150-4	BR550	Ratio Det. Bias Net.
13	4	50	25136	TC40	M-4-150	TA-55	PRS150-4	BR550	" " " "
14	.005	600	25183	TP408	S-6-005	TC-25	684-005	DT6D5	Line Filter
15	.003	600	25184	TP406	S-6-003	TC-23	684-003	DT6D3	Tone Compensation
16	.002	600	25185	TP405	S-6-002	TC-22	684-002	DT6D2	" "
17	.01	400	25194	TP421	S-4-01	TC-11	484-01	DT4S1	Audio Coupling
18	.01	400	25194	TP421	S-4-01	TC-11	484-01	DT4S1	" "
19	.01	400	25194	TP421	S-4-01	TC-11	484-01	DT4S1	" "
20	.02	600		TP412	S-6-02	TC-12	684-02	DT6S2	" "
21	.003	600	25184	TP408	S-6-003	TC-23	684-003	DT6D3	Output Plate Bypass
22	.003	600	25184	TP408	S-6-003	TC-23	684-003	DT6D3	" " "
23	.02	600		TP412	S-6-02	TC-12	684-02	DT6S2	Audio Coupling
24	.1	200	25215	TP428	S-4-1	TC-1	484-.1	DT4P1	AVC Filter
25	.01	600	25194	TP410	S-6-01	TC-11	684-01	DT6S1	IF Decoupling
26	.05	200	25196	TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter
27	.005	600	25183	TP408	S-6-005	TC-25	684-005	DT6D5	AM Conv. Screen Bypass
28	.05	200	25196	TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter
29	4000	300	25271	MC463	MW.5-24	1FM-24	1467-004	1D5D4	De-emphasis.
30	100	500	25188	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	RF Filter
31	100	500	25188	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	" "
32	4		25327						IF Coupling
33	100	500	25188	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	FM Diode Load Cap.
34	100	500	25188	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	" " " "
35	4000	300	25271	MC463	MW.5-24	1FM-24	1467-004	1D5D4	IF Screen Bypass
36	30		25329						IF Plate Decoup.
37	1500		25273	MC456	MW.5-215	1FM-215	1467-0015	1W5D15	" " "
38	4000	300	25271	MC463	MW.5-24	1FM-24	1467-004	1D5D4	IF Screen Bypass
39	1500		25273	MC456	MW.5-215	1FM-215	1467-0015	1W5D15	IF Screen Decoup.
40	1500		25273	MC456	MW.5-215	1FM-215	1467-0015	1W5D15	AVC Filter
41	1500		25273	MC456	MW.5-215	1FM-215	1467-0015	1W5D15	FM Conv. Plate Decoup.
42	1500		25273	MC456	MW.5-215	1FM-215	1467-0015	1W5D15	FM Conv. Screen Bypass
43	30		25329						FM Osc. Grid Cap.
44	30		25329						FM RF Coupling
45	1500		25273	MC456	MW.5-215	1FM-215	1467-0015	1W5D15	FM RF Screen Bypass
46	60		25333						FM RF Coupling
47	1500		25273	MC456	MW.5-215	1FM-215	1467-0015	1W5D15	AVC Filter
48	47	500	25193	MC225	MO.5-447	1FM-45	1468-00005	5W5Q5	AM Osc. Grid Cap.
49	1500		25273	MC456	MW.5-215	1FM-215	1467-0015	1W5D15	FM RF Plate Decoup.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: BRUNSWICK PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
50	3 Meg.	½	78120				Volume Control and Switch
51A	3 Meg.	½	78072	UM165	D13-140	AM-67-Z	Tone Control
B	Shaft		Not Req.	SS25	E	KSS-3	Attach 51A per instructions

PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

ITEM No.	USE	DC RES.: PRI.	DC RES.: SEC.	REPLACEMENT DATA: BRUNSWICK PART No.	REPLACEMENT DATA: MEISSNER PART No.
96	Loop Ant.	65Ω	.7Ω	38835	
97	FM Ant.			11325	
98	Ant. Load. Coil		1.5Ω	38845	
99	FM Ant. Coil		0Ω	38690	
100	FM RF Coil		0Ω	38691	
101	Wave Trap		Inf.	38484	
102	BC Osc.Coil	1Ω	5.5Ω	38694	14-1040
103	FM Osc.Coil		0Ω	38692	
104	AM Input IF	10Ω	9Ω	38681	16-5740
105	FM 1st IF	.5Ω	.5Ω	38683	
106	AM OutputIF	9Ω	9Ω	38682	16-5742
107	FM 2nd IF	.5Ω	.5Ω	38684	
108	Ratio Det.	2Ω	0Ω	38685	
109	RF Choke		.1Ω	38661	
110	RF Choke		.1Ω	38661	
111	RF Choke		.1Ω	38661	
112	RF Choke		.1Ω	38661	
113	RF Choke		.1Ω	58471	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: BRUNSWICK PART No.	REPLACEMENT DATA:	INSTALLATION NOTES
114	Bayonet	6-8	0.25A	Blue	42185		Type 44
115	"	"	"	"	"		"

MISCELLANEOUS

ITEM No.	PART NAME	BRUNSWICK PART No.	NOTES
117	Switch	90214	Band-Phono
118	Tuning Cap.	26237	AM (13-465 MMF, 13-465 MMF)
A5 }	Trimmer Strip	26350	{ BC Osc. Adj.
A7 }			{ BC Osc. Padder
	Glass Dial	31385	
	Dial Pointer	11257	
	Knob	67444	

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	BRUNSWICK PART No.	IRC PART No.	
52	220KΩ	½	77216	BTS-220K	Red-Red-Yl. AM Converter Grid
53	22KΩ	½	77266	BTS-22K	Red-Red-Or. AM Oscillator Grid
54	10KΩ	2	77013	BT-2-10K	Br.-Blk.-Or. AM Converter Screen Dropping
55	100KΩ	½	77214	BTS-100K	Br.-Blk.-Yl. AVC Network
56	100KΩ	½	77214	BTS-100K	Br.-Blk.-Yl. FM-RF Grid
57	1000Ω	½	77262	BTS-1000	Br.-Blk.-Red FM-RF Plate Decoupling
58	15KΩ	½	77265	BTS-15K	Br.-Grn.-Or. FM-RF Screen Dropping
59	10KΩ	½	77212	BTS-10K	Br.-Blk.-Or. FM-RF Coil Shunt
60	22KΩ	½	77266	BTS-22K	Red-Red-Or. FM Oscillator Grid
61	10KΩ	2	77013	BT-2-10K	Br.-Blk.-Or. FM Converter Screen Dropping
62	1000Ω	½	77262	BTS-1000	Br.-Blk.-Red FM Converter Plate Decoupling
63	100KΩ	½	77214	BTS-100K	Br.-Blk.-Yl. AVC Network
64	1 Meg.	½	77218	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
65	4.7 Meg.	½	77272	BTS-4.7 Meg.	Yl.-Vi.-Grn. " "
66	33KΩ	½	77267	BTS-33K	Or.-Or.-Or. IF Screen Dropping
67	1000Ω	½	77262	BTS-1000	Br.-Blk.-Red IF Screen Decoupling
68	4700Ω	½	77211	BTS-4700	Yl.-Vi.-Red IF Plate Decoupling
69	1000Ω	½	77262	BTS-1000	Br.-Blk.-Red IF Plate Decoupling
70	33KΩ	½	77267	BTS-33K	Or.-Or.-Or. IF Screen Dropping
71	1000Ω	½	77262	BTS-1000	Br.-Blk.-Red IF Decoupling
72	22KΩ	½	77266	BTS-22K	Red-Red-Or. De-emphasis
73	33KΩ	½	77267	BTS-33K	Or.-Or.-Or. Ratio Detector Bias Network
74	33KΩ	½	77267	BTS-33K	Or.-Or.-Or. " " "
75	47KΩ	½	77213	BTS-47K	Yl.-Vi.-Or. De-emphasis
76	47KΩ	½	77213	BTS-47K	Yl.-Vi.-Or. Diode RF Filter
77	470KΩ	½	77217	BTS-470K	Yl.-Vi.-Yl. Diode Load
78	1 Meg.	½	77218	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
79	220KΩ	½	77216	BTS-220K	Red-Red-Yl. Series Phono
80	220KΩ	½	77216	BTS-220K	Red-Red-Yl. Tone Compensation
81	10 Meg.	½	77274	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
82	470KΩ	½	77217	BTS-470K	Yl.-Vi.-Yl. AF Plate Load
83	470KΩ	½	77217	BTS-470K	Yl.-Vi.-Yl. Phase Inverter Plate Load
84	10 Meg.	½	77274	BTS-10 Meg.	Br.-Blk.-Blue Phase Inverter Grid
85	1 Meg.	½	77218	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
86	220KΩ	½	77216	BTS-220K	Red-Red-Yl. Output Grid
87	220KΩ	½	77216	BTS-220K	Red-Red-Yl. " "
88	220KΩ	½	77216	BTS-220K	Red-Red-Yl. " "
89	270Ω	2	77189	BW-2-270	Red-Vi.-Br. Output Cathode
90	1000Ω	2	77262	BT-2-1000	Br.-Blk.-Red Filter
91	2700Ω	4.7	77243	AB-2500	"

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	BRUNSWICK PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
92	117V AC @ .64A	540V CT @ .07A	5.0V AC @ 2.0A	6.3V AC @ 3.5A	94204	P-6120	T22R04	P-2952

DATE 12/47

TRANSFORMER (OUTPUT)

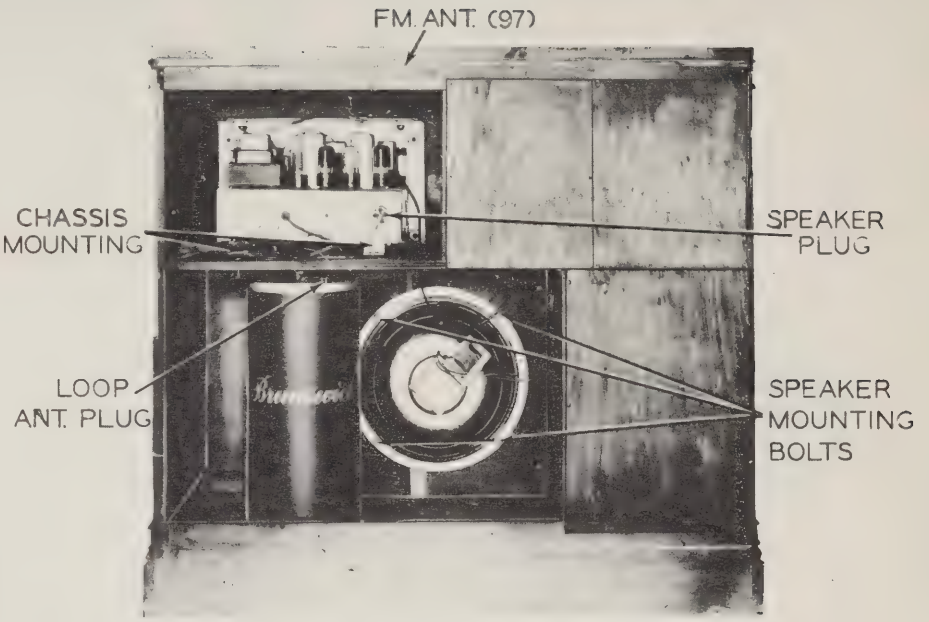
ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		BRUNSWICK PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
93	13000Ω CT	4.1Ω	240Ω CT	.4Ω	94195	A-3852	T22S67	A-2901	

SET #20

SPEAKER

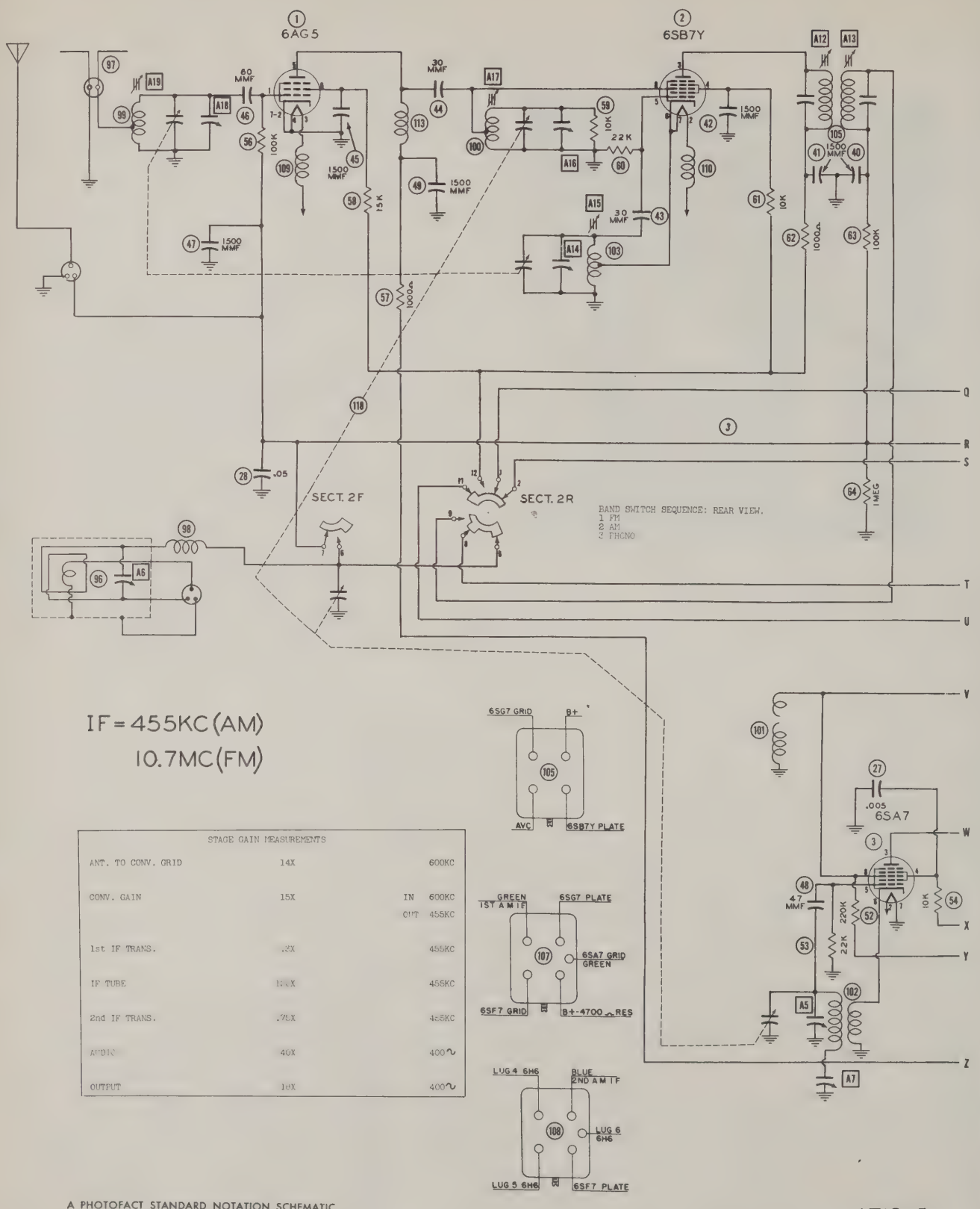
ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			BRUNSWICK PART No.	JENSEN PART No.		
	FIELD	VC IMP.		ST-101†		†Replace output transformer to match 8Ω voice coil.
94	PM	4.1Ω	81126	Mod. P12-T		
	CONE DIA.	VC DIA.				
95	11-3/4"	1"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

FOLDER #4719-S



DISASSEMBLY INSTRUCTIONS

1. Remove four push-on type control knobs.
2. Remove speaker plug from chassis.
3. Remove phono-motor plug from socket under phono motor.
4. Remove phono-pickup plug from socket under record changer.
5. Remove two plugs from loop antenna.
6. Remove four screws holding loop antenna in cabinet. Remove loop from cabinet.
7. Remove FM antenna plug from chassis.
8. Remove four screws holding chassis in cabinet. Remove chassis from cabinet.
9. Remove four hex nuts holding speaker in cabinet. Remove speaker from cabinet.



IF = 455KC (AM)
10.7MC (FM)

STAGE GAIN MEASUREMENTS

ANT. TO CONV. GRID	14X		600KC
CONV. GAIN	15X	IN	600KC
		OUT	455KC
1st IF TRANS.	.8X		455KC
IF TUBE	12X		455KC
2nd IF TRANS.	.75X		455KC
AUDIO	40X		400~
OUTPUT	1X		400~

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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4719-5

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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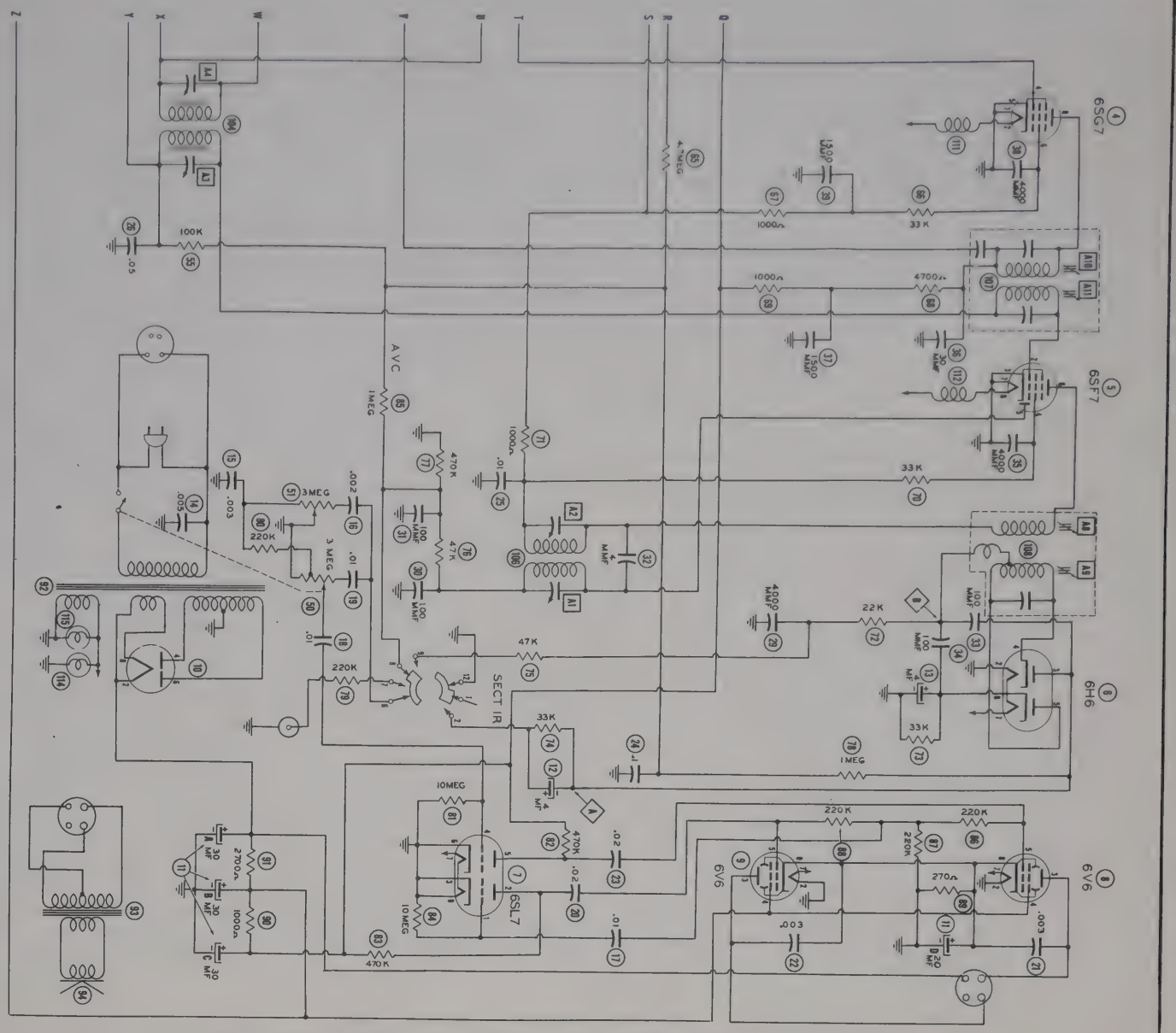
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE



VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

VOLTAGE READINGS

	Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
‡	1	6AG5	-.6VDC	0V.	6.3VAC	0V.	160VDC	135VDC	0V.	-
‡	2	6SB7Y	0V.	6.3VAC	150VDC	80VDC	-5VDC§	0V.	0V.	0V.
	3	6SG7	0V.	6.3VAC	0V.	-.6VDC	0V.	90VDC	0V.	130VDC
	4	6SA7	0V.	0V.	165VDC	90VDC	-7.4VDC§	0V.	6.3VAC	-.4VDC
	5	6SF7	0V.	-.5VDC	0V.	75VDC	-.6VDC	155VDC	0V.	6.3VAC
‡	6	6H6	0V.	0V.	-8.9VDC	-8.4VDC	5.7VDC	-3.9VDC	6.3VAC	10VDC
	7	6SL7GT	-.8VDC	55VDC	0V.	-.8VDC	55VDC	0V.	6.3VAC	0V.
	8	6V6GT	0V.	0V.	275VDC	195VDC	0V.	0V.	6.3VAC	12VDC
	9	6V6GT	0V.	0V.	275VDC	195VDC	0V.	0V.	6.3VAC	12VDC
	10	5Y3GT	0V.	280VDC	0V.	270VAC	0V.	270VAC	0V.	280VDC

RESISTANCE READINGS

	Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
‡	1	6AG5	900KΩ	0Ω	.2Ω	0Ω	65KΩ	80KΩ	0Ω	-
‡	2	6SB7Y	0Ω	.2Ω	65KΩ	75KΩ	22KΩ	0Ω	0Ω	0Ω
	3	6SG7	0Ω	.2Ω	0Ω	850KΩ	0Ω	100KΩ	0Ω	70KΩ
	4	6SA7	0Ω	0Ω	65KΩ	75KΩ	22KΩ	.7Ω	.1Ω	1.3 Meg.
	5	6SF7	0Ω	1.2 Meg.	0Ω	95KΩ	420KΩ	60KΩ	0Ω	.2Ω
‡	6	6H6	0Ω	0Ω	25KΩ	INF.	INF.	INF.	.1Ω	30KΩ
	7	6SL7GT	10 Meg.	530KΩ	0Ω	10 Meg.	530KΩ	0Ω	.1Ω	0Ω
	8	6V6GT	0Ω	0Ω	60KΩ	60KΩ	440KΩ	215KΩ	.1Ω	280Ω
	9	6V6GT	0Ω	0Ω	60KΩ	60KΩ	440KΩ	215KΩ	.1Ω	280Ω
	10	5Y3GT	INF.	60KΩ	INF.	95Ω	INF.	100Ω	INF.	60KΩ

‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

§TAKEN WITH VACUUM TUBE VOLTMETER.

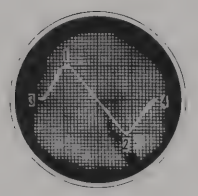
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

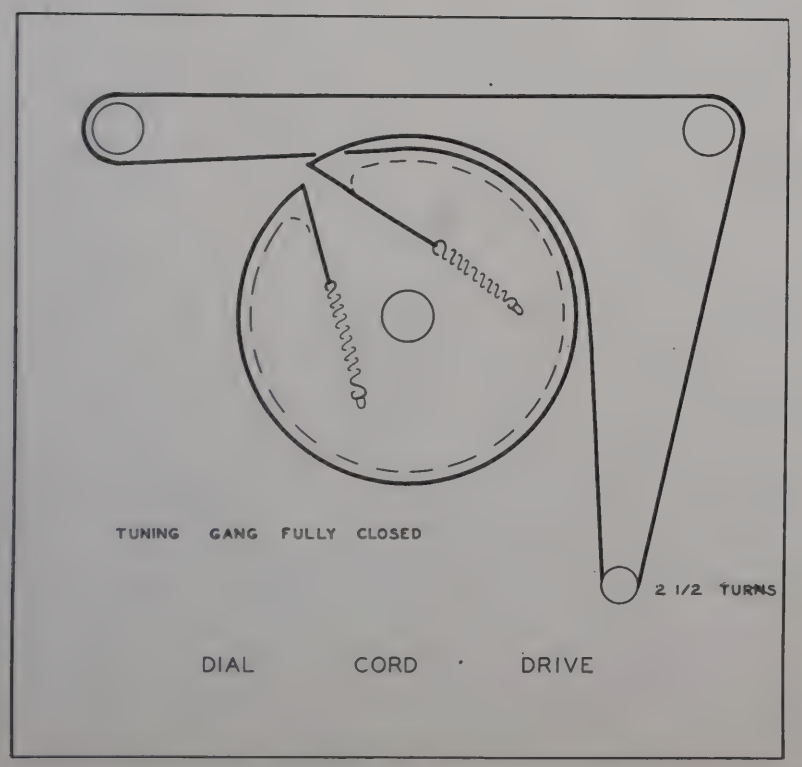
A

B

C



D



BRUNSWICK MODELS T-4000
"Buckingham," T-4000½ "Buckingham,"
D-6876 "Plymouth." PAGE 9

FM ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use 60~ synchronized sweep voltage from signal generator for horizontal deflection. The lead carrying this voltage should be shielded and of low total capacity.
The scope patterns to be strived for in alignment were obtained under ideal conditions. They should be duplicated as nearly as possible.

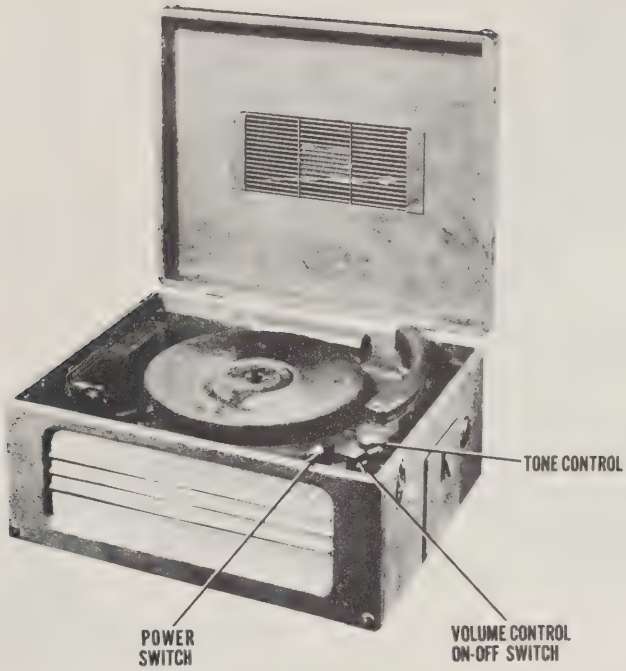
	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5	3300MMF	High side to Pin 2 (grid) of 6SF7. Low side to chassis.	10.7MC (freq. modulated 300KC sweep 60 modulation)	FM (fully counter-clockwise)	Tuning cap. fully open.	Connect vertical amplifier to Point A. Ground to chassis.	A8	Disconnect 4 MFD. capacitor from Point A. Remove 6SL7 Tube from socket. Set volume and tone control completely clockwise. Preset A9 by turning it out as far as possible. Adjust A8 for pattern of Figure A.
6	3300MMF	"	"	"	"	"	A9	Adjust for pattern of Figure B making certain that both sides of the curve are symmetrical.
7	3300MMF	High side to Pin 4 (grid) 6SG7. Low side to chassis.	"	"	"	"	A10,A11	Adjust for maximum amplitude and symmetry as in Figure A.
8	3300MMF	High side to Pin 8 (grid) 6SB7Y. Low side to chassis.	"	"	"	"	A12,A13	Adjust A12 for maximum amplitude and symmetry as in Figure A. Adjust A13 for pattern of Fig. C making both sides as symmetrical as possible.
9	3300MMF	"	"	"	"	Vertical amplifier to Point B. Low side to chassis.	A8,A9	Reconnect 4 MFD. capacitor to Point A. Pattern should be that of Figure D. If it is not, adjust A8 and A9 for maximum amplitude and straightness of pattern from "1" to "2" with a horizontal line from "3" to "4" crossing center of diagonal line. Replace 6SL7 tube in socket.
						OUTPUT METER		
10	300Ω carbon res.	High side to ungrounded terminal of FM ant. socket. Low side to chassis.	107.9MC (freq. modulated 300KΩ sweep 400 modulation)	FM (fully counter-clockwise)	Channel 300	Across voice coil	A14	Adjust for maximum output
11	"	"	87.9MC (freq.mod.)	"	Channel 200	"	A15	Adjust for maximum output. Repeat Steps 10 and 11 until no further improvement can be made.
12	"	"	105MC (freq.mod.)	"	Tune for maximum output. (Approx. Channel 285)	"	A16	Adjust for maximum output.
13	"	"	92MC (freq.mod.)	"	Tune for maximum output. (Approx. Channel 220)	"	A17	Adjust for maximum output. Repeat Steps 12 & 13 until no further improvement can be made.
14	"	"	105MC (freq.mod.)	"	Tune for maximum output. (Approx. Channel 285)	"	A18	Adjust for maximum output.
15	"	"	92MC (freq.mod.)	"	Tune for maximum output. (Approx. Channel 220)	"	A19	Adjust for maximum output. Repeat Steps 14 and 15 until no further improvement can be made.

FM ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5	.05 MFD	High side to Pin 4 (grid 6SG7. Low side to chassis.	10.7MC (unmodulated)	FM	Tuning cap. fully open.	DC probe of VTVM to Point B. Common lead to chassis.	A8,A9	Preset A9 by turning it out as far as possible. Adjust A8 for maximum deflection (negative). Then adjust A9 for zero deflection. (as A9 is adjusted voltage will go up slowly then decrease rapidly. Adjust until voltage decreases to zero
6	.05 MFD	"	"	"	"	DC probe of VTVM to point A. Common lead to chassis.	A10, A11	Preset A11 by turning it out as far as possible. Adjust A10 for maximum deflection. Then adjust A11 for maximum deflection.
7	.05 MFD	High side to Pin 8 (grid) of 6SB7Y. Low side to chassis.	"	"	"	"	A12, A13.	Preset A13 by turning it out as far as possible. Adjust A12 for maximum deflection. Then adjust A13 for maximum deflection.
8	300Ω carbon res.	High side to ungrounded terminal of FM ant. socket Low side to chassis.	87.5MC	"	Tuning cap. fully closed	"	A15	Adjust for maximum deflection.
9	"	"	108.5MC	"	Tuning cap. fully open.	"	A14	Adjust for maximum deflection. Repeat Steps 8 and 9 until no further improvement can be made.
10	"	"	92MC	"	Tune for maximum reading.	"	A17,A19	Adjust for maximum deflection.
11	"	"	105MC	"	Tune for maximum reading.	"	A16,A18	Adjust for maximum deflection. Repeat Steps 10 and 11 until no further improvement can be made.

FOR AM ALIGNMENT SEE FRONT PAGE OF THIS FOLDER.

CAPITOL MODEL U-24
BATTERY OPERATED



CAPITOL MODEL U-24
BATTERY OPERATED

CAPITOL MODEL U-24

TRADE NAME	Capitol, Model U-24
MANUFACTURER	Capitol Distributing Corp., Sunset & Vine, Hollywood, Calif.
TYPE SET	Three Power Portable Record Player with Amplifier and Speaker
TUBES (FOUR)	Types, 1S5 AF Amp., 3Q4 Power Output, 50B5 Power Output, 35W4 Rectifier.
POWER SUPPLY	110-120 Volts AC-DC or 1.5 Volts "A" Supply and 90 Volts "B" Supply
RATING	.220 Amp. @ 117 Volts AC or 144MA @ 1.5V DC and 23MA @ 90V DC

#TAKEN IN BATTERY POSITION.

VOLTAGE READINGS

	Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
	1	1S5	0V.	0V.	0V.	23VDC	23VDC	0V.	1.2VDC
#	2	3Q4	1.4VDC	68VDC	0V.	83VDC	0V.	68VDC	1.4VDC
	3	50B5	0V.	6.2VDC	32VAC	87VAC	88VDC	100VDC	0V.
	4	35W4	0V.	0V.	87VAC	117VAC	117VAC	117VAC	137VDC

RESISTANCE READINGS

	Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
	1	1S5	0Ω	INF.	INF.	420KΩ	420KΩ	540KΩ	*
#	2	3Q4	*	INF.	600KΩ	INF.	0Ω	INF.	*
	3	50B5	600KΩ	120Ω	200Ω	270Ω	90KΩ	90KΩ	600KΩ
	4	35W4	INF.	INF.	270Ω	300Ω	290Ω	290Ω	90KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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DATE 12/47 SET #29 FOLDER #4719-6

PARTS LIST AND DESCRIPTIONS

Capitol Model U-34
Battery Operated

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: CAPITOL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	AF Amp.		1S5	6AU	
2	Power Output		3Q4	7BA	
3	"		50B5	7BZ	
4	Rectifier		35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: CAPITOL PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
5A	40	150		FP304	DY-304	┌ EL-24	┌ AF88D	UP4CJ65	■ Filter
B	20	150							▲ "
C	100	12				UHC-112	└ PRS25-100		Cathode Bypass
6	.1	400		TP428	MPH-4-1	TC-1	484-.1	DT4P1	Line Filter
7	.002	600		TP405	S-6-002	TC-22	684-002	DT6D2	Output Plate Bypass
8	.05	400		TP426	S-4-05	TC-15	494-05	DT4S5	Audio Coupling
9	.005	600		TP408	S-6-005	TC-25	684-005	DT6D5	Tone Comp.
10	.1	400		TP428	S-4-1	TC-1	484-.1	DT4P1	Phono Coupling
11	.1	400		TP428	S-4-1	TC-1	484-.1	DT4P1	Line Isolation
12	470	500		MC245	MO.5-35	1FM-35	1468-0005	5W5T5	Tone Comp.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CAPITOL PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
13A	500KΩ	½		MR48	D13-133	M-60-Z	Volume Control
B	Shaft			Not Req.	A	Not Req.	Attach to 13A per instructions
C	Switch			M26	41	SW-A	" " " "
14A	3 Meg.	½		MR57	D13-140	M-67-Z	Tone Control
B	Shaft			Not Req.	A	Not Req.	Attach to 14A per instructions

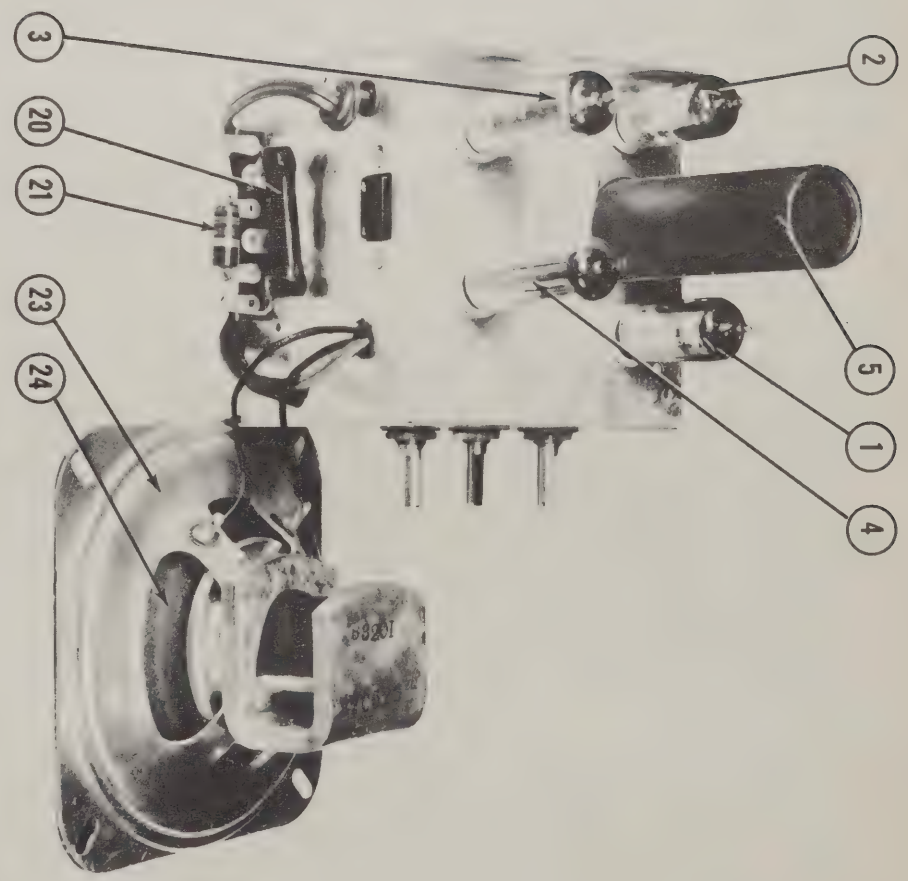
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CAPITOL PART No.	IRC PART No.	IDENTIFICATION CODES
15	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue Tone Compensation
16	330KΩ	½		BTS-330K	Or.-Or.-Yl. AF Plate Load
17	680KΩ	½		BTS-680KΩ	Blue-Gray-Yl. Output Grid
18	390Ω	½		BW-½-390	Or.-White-Br. Bias
19	120Ω	½		BW-½-120	Br.-Red-Br. Output Cathode
20	200Ω	10		AB-200	Line Dropping
21	680Ω	2		BT-2-680	Blue-Gray-Br. Filter

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: CAPITOL PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
22	3600Ω tapped @ 2300Ω	3.5Ω	600Ω tapped @ 290Ω	.6Ω					

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			CAPITOL PART No.	JENSEN PART No.		
23	FIELD PM	VC IMP. 3.5Ω		5T-107* Mod. P5-V		*Drill new mounting holes.
24	CONE DIA. 5"	VC DIA. 1/2"	CONE HAS SPECIAL ADJUSTMENT FEATURE-ORDER FROM MANUFACTURER.			

BATTERIES

ITEM No.	VOLTAGE	CAPITOL PART No.	EVEREADY			INSTALLATION NOTES
			"A"	"B"	"A-B"	
25	1½V "A"		#745			
26	90V "B"			#482		2 Used in series

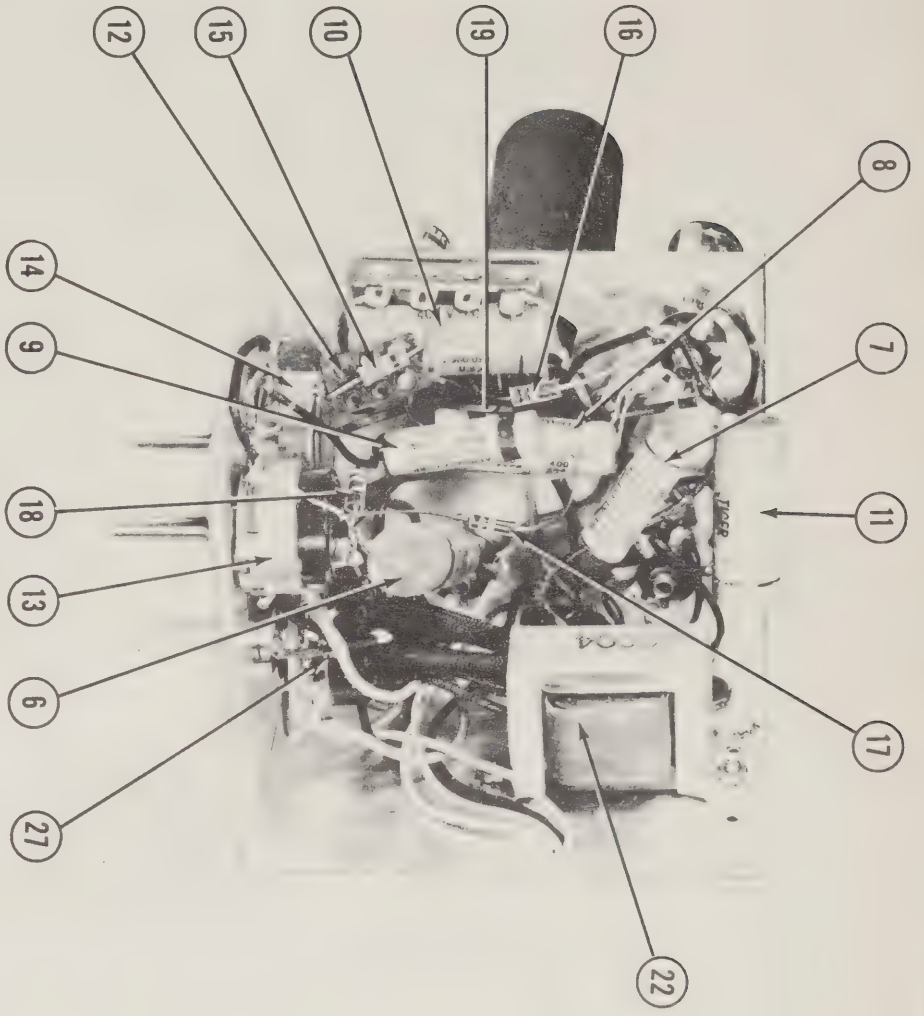
MISCELLANEOUS

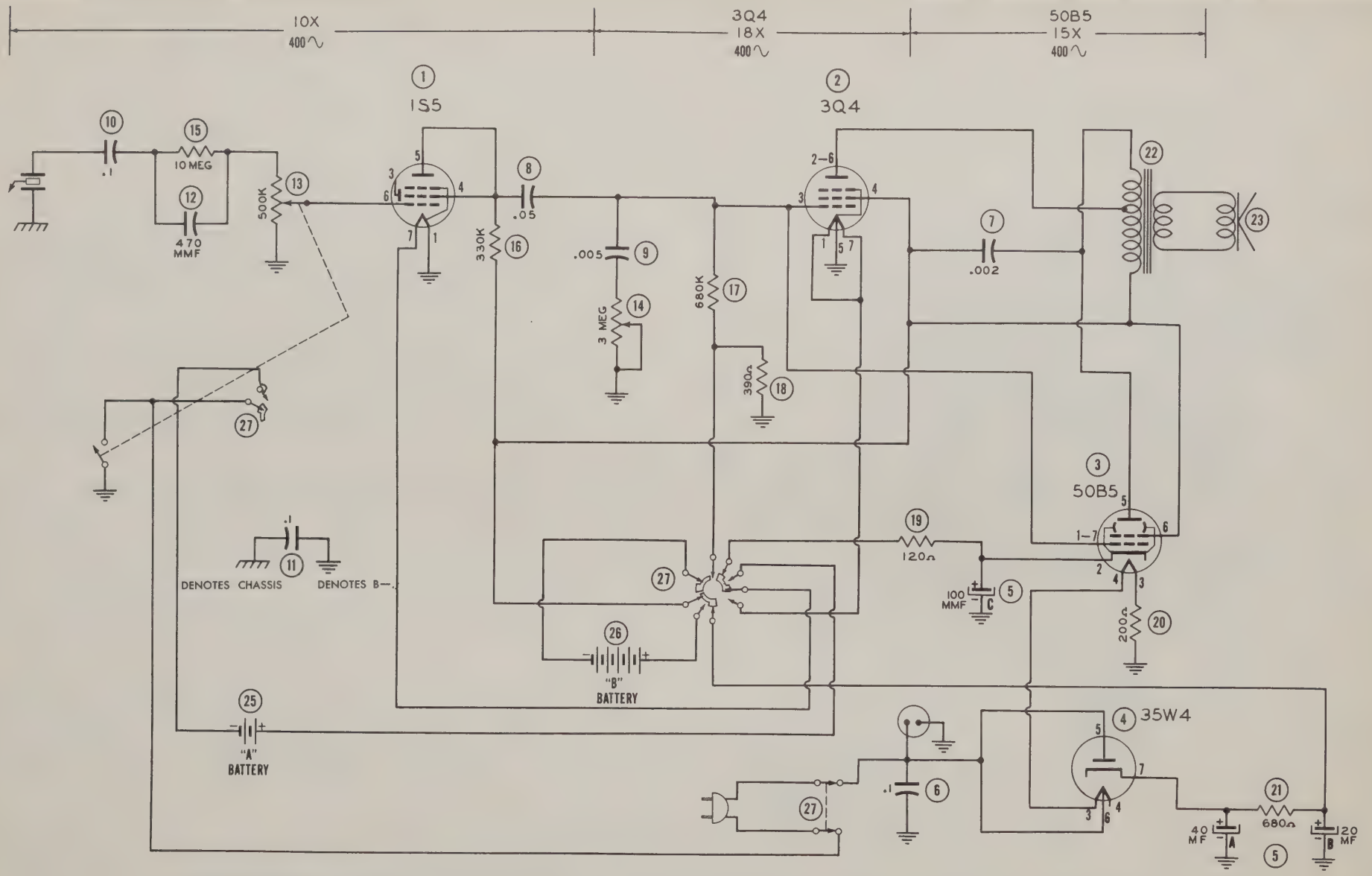
ITEM No.	PART NAME	CAPITOL PART No.	NOTES
27	Switch		AC-DC-Batt.

DISASSEMBLY INSTRUCTIONS

1. Remove two push-on type control knobs.
2. Loosen set screw and remove knob on battery-AC-DC switch shaft.
3. Remove seven wood screws holding phono mounting board in cabinet.
4. Remove phono-motor plug from chassis.
5. Remove three wood screws holding left hand phono-motor board in cabinet. Remove from cabinet.
6. Remove plugs from batteries.
7. Remove four wood screws holding speaker in cabinet.
8. Remove two wood screws holding chassis in cabinet. Remove chassis and speaker from cabinet.
9. Unsolder phono-pickup lead from chassis.

CHASSIS—BOTTOM VIEW





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DELCO MODELS
R-1236, R-1237

DELCO MODELS
R-1236, R-1237

DELCO MODEL R-1236

TRADE NAME	Delco, Models R-1236, R-1237
SUPPLIER	United Motors Service, Div. of G.M.C. General Motors Bldg., Detroit 2, Mich.
TYPE SET	AC-DC Operated Superheterodyne Receiver with Pushbutton Tuning
TUBES (SIX)	Types, 12SK7GT RF Amp., 12SA7 Converter, 12SK7GT IF Amp., 12SQ7 Det.-AVC-AF, 35L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	105-125 Volts AC-DC
TUNING RANGE—BROADCAST	540-1720KC RATING .240 Amp. @ 117V AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning cap. fully closed and set the pointer over the line directly under the number "55". Use isolation transformer if available. If not, connect a .1 Mfd capacitor in series with low side of signal gen. & B-. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.02 MFD.	High side to Pin 8 (grid) 12SA7. Low side to B-.	456KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used, reduce dummy ant. to .001 MFD. to reduce hum modulation.
2	200MMFD	High side to ext. ant. lead. Low side to chassis.	1720KC	"	"	A5	Adjust for maximum output.
3	200MMFD	"	1400KC	Tune for maximum output.	"	A6	" " " "

PUSHBUTTON ADJUSTMENTS

1. Turn receiver on and allow it to warm up for about 15 minutes.
2. Remove buttons and loosen the set screws under each button.
3. Depress the first pushbutton shaft desired to be set up, as far as possible. While keeping the shaft firmly depressed manually tune in desired station.
4. Release pushbutton shaft and tighten set screw firmly.
5. Check accuracy of setting by detuning with manual control then tuning with button. If setting is off, repeat Steps 2, 3 & 4.
6. To set up the remaining buttons follow the same procedure outlined above.

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DATE 12/47 SET #29 FOLDER #4719-7

PARTS LIST AND DESCRIPTIONS

DELCO MODELS R-1236, R-1237

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: DELCO PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	12SK7GT	12SK7GT	8N	
2	Converter	12SA7	12SA7	8R	
3	IF Amp.	12SK7GT	12SK7GT	8N	
4	Det.-AVC-AF	12SQ7	12SQ7	8Q	
5	Power Output	35L6GT	35L6GT	7AC	
6	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: DELCO PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	40	150	1217026	2N511	DSB-2x40-150	TA-440	PRSA-150-40-40	BRD4415	Filter - Red
B	40	150							" - Blue
7A	40	150	1217022	2N511	DSB-2x40-150	TA-440	PRSA-150-40-40	BRD4415	Alternate Filter
B	40	150							" "
8	.05	600	7230592	TP426	S-6-05	TC-15	684-05	DT6S5	Rectifier Bypass
9	.02	400	1207902	TP412	S-4-02	TC-12	484-02	DT4S2	Output Plate Bypass
10	.005	600	7230912	TP408	S-6-005	TC-25	684-005	DT6D5	Audio Coupling
11	.002	600	7237954	TP405	S-6-002	TC-22	684-002	DT6D2	Tone Compensation
12	.001	600	7239188	TP404	S-6-001	TC-21	684-001	DT6D1	Audio Coupling
13	.01	400	7233608	TP421	S-4-01	TC-11	484-01	DT4S1	Tone Compensation
14	.1	200	1207908	TP428	S-4-1	TC-1	484-.1	DT4P1	AVC Filter
15	.05	200	7230592	TP426	S-4-05	TC-15	484-05	DT4S5	Ant. Coupling
16	.2	400	7231594	TP429	S-4-2	TC-2	484-.2	DT4P2	Line Isolation
17	47	500	7238879	MC225	M0.5-45	1FM-45	1468-00005	5W5Q5	AF Plate Bypass
18	24		7239153	MC220	M0.5-425	MS-425	1468-000025	5W5Q25	Osc. Grid Cap. Cer.
19	150	500	7230893	MC236	M0.5-315	1FM-315	1468-00015	5W5T15	RF Coupling
20	18		1216659						Fixed Trimmer Cer.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: DELCO PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
21A	500KΩ	½	1216505	MRT427	D13-133X	T-78	Volume Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 21A per instructions
C	Switch		" "	M26	41	SW-A	" " " "

RESISTORS

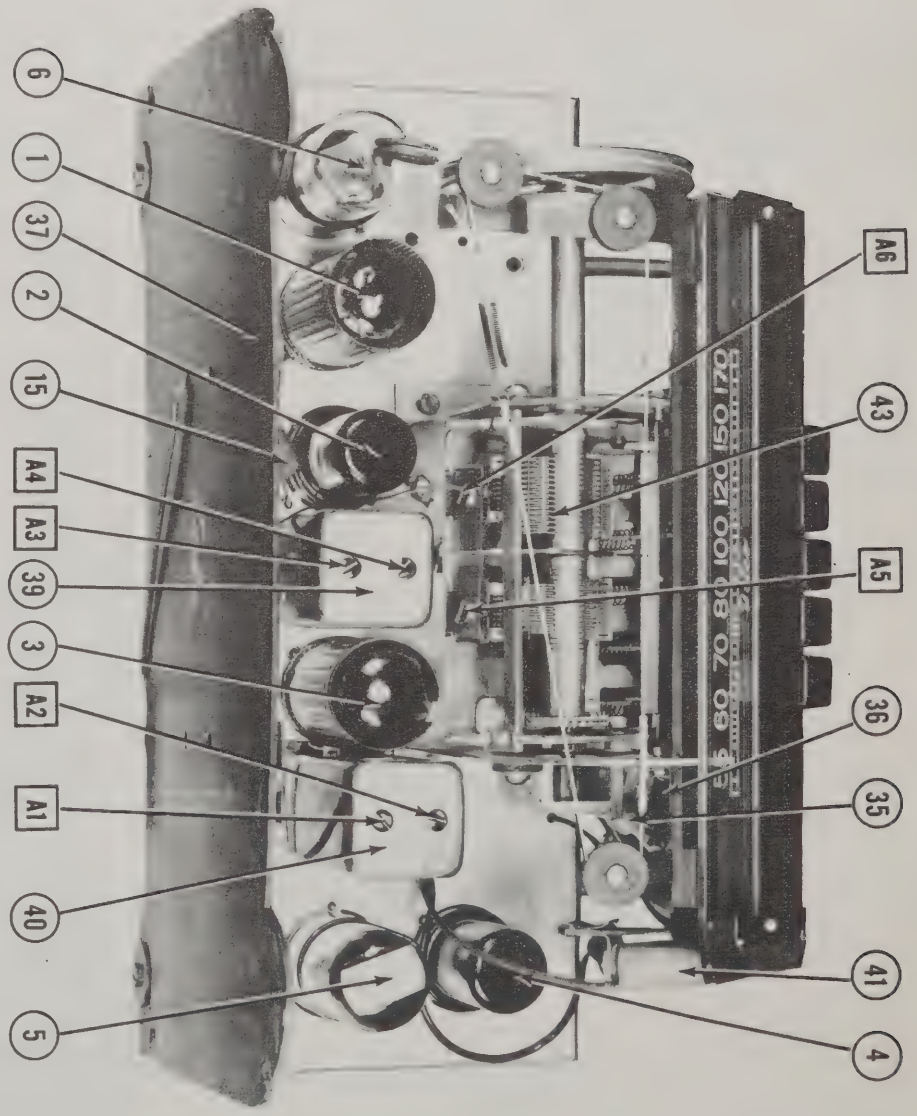
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: DELCO PART No.	IRC PART No.	IDENTIFICATION CODES
22	3900Ω	½	1214546	BTS-3900	Or.-White-Red RF Plate Load
23	47KΩ	½	1214553	BTS-47K	Yl.-Vi.-Or. Converter Grid
24	22KΩ	½	1214550	BTS-22K	Red-Red-Or. Osc. Grid
25	3.3 Meg.	½	1214564	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
26	56KΩ	½	1213267	BTS-56K	Grn.-Blue-Or. Tone Compensation
27	10 Meg.	½	1215548	BTS-10 Meg.	Br.-Blk.-Blue AF Grid Load
28	220KΩ	½	1214555	BTS-220K	Red-Red-Yl. AF Plate Load
29	470KΩ	½	1214559	BTS-470K	Yl.-Vi.-Yl. Output Grid
30	150Ω	½	1213220	BW-½-150	Br.-Grn.-Br. Output Cathode
31	1000Ω	1	1211037	BTA-1000	Br.-Blk.-Red Filter
32	220KΩ	½	1214555	BTS-220K	Red-Red-Yl. Line Isolation
33	33Ω	½		BW-½-33	Or.-Or.-Blk. Rectifier Ballast - See Note

Note-Not used in all models.

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: DELCO PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
34	3000Ω	3.3Ω	210Ω	.85Ω	1216857	A-3876*	T22S45*	A-2928*	*Drill new mounting holes.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: DELCO PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.		ST-10††		
35A	PM	3.3Ω	1216563	Mod. P5-A		†Fabricate new mounting bracket.
B			1217361			Alternate Speaker.
	CONE DIA.	VC DIA.				
36	4-3/4"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

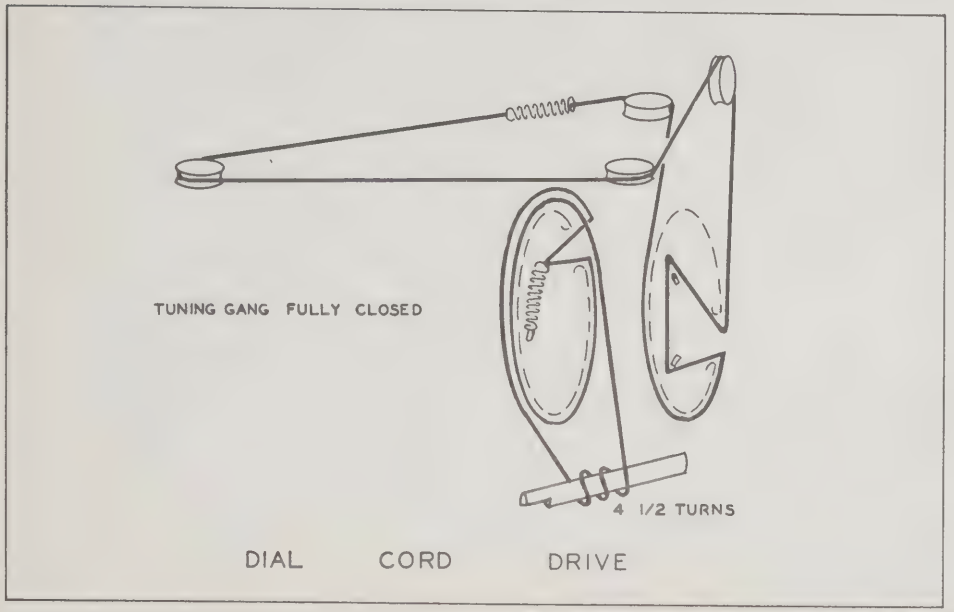
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: DELCO PART No.	MEISSNER PART No.
37	Loop Ant.	.1Ω	1.5Ω	1216621	
38	Osc. Coil	3Ω	12Ω	1216572	14-1040
39	Input IF	18Ω	18Ω	1216605	16-6658
40	Output IF	18Ω		1216570	16-6670

DIAL LIGHT

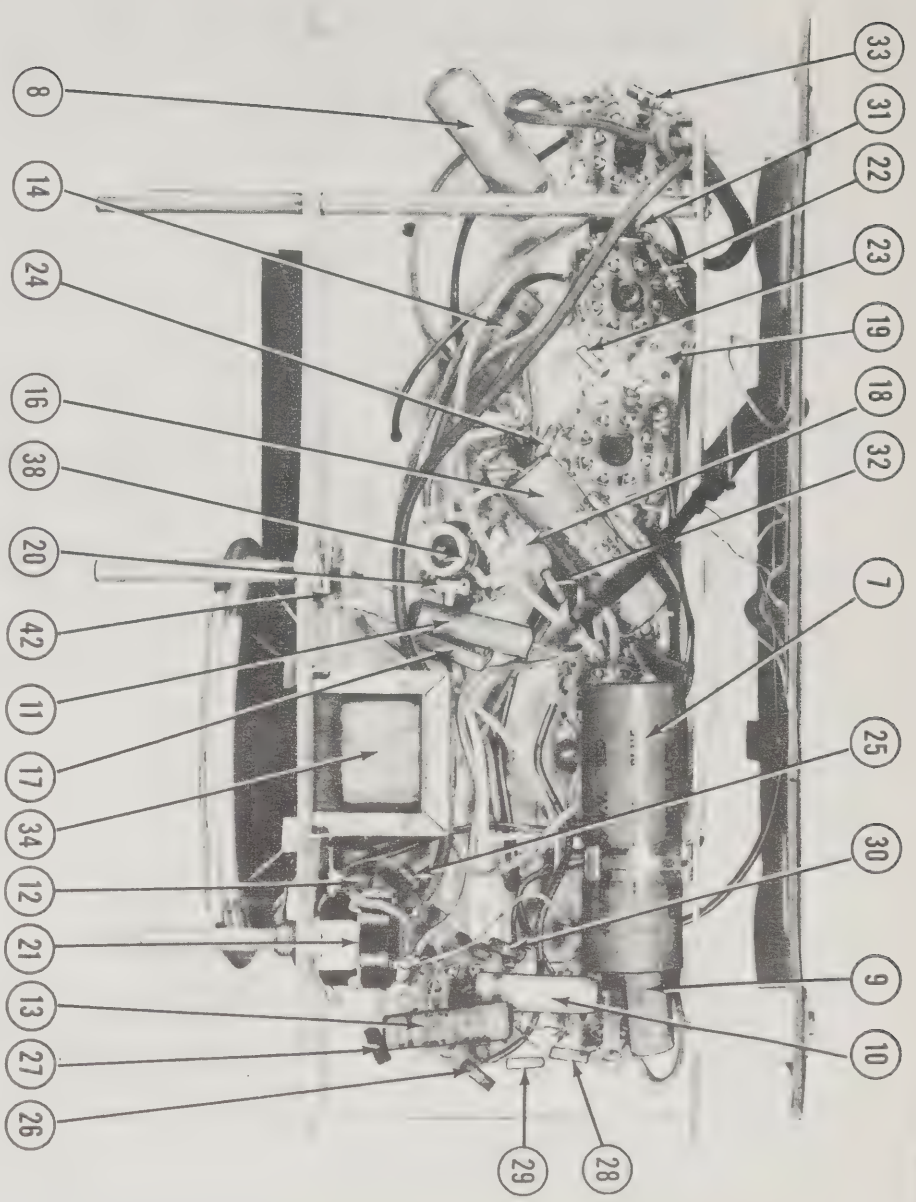
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: DELCO PART No.		INSTALLATION NOTES
41	Bayonet	6-8	0.15A	Brown	435433		Type 47

MISCELLANEOUS

ITEM No.	PART NAME	DELCO PART No.	NOTES
42	Tone Switch	1216544	1217182 & 1217190 Alternates
43	2 Gang Var. Cap.	1217399	(34-502, 17-180 MMF)
	Dial Glass	1216578	
	Pointer	1216498	



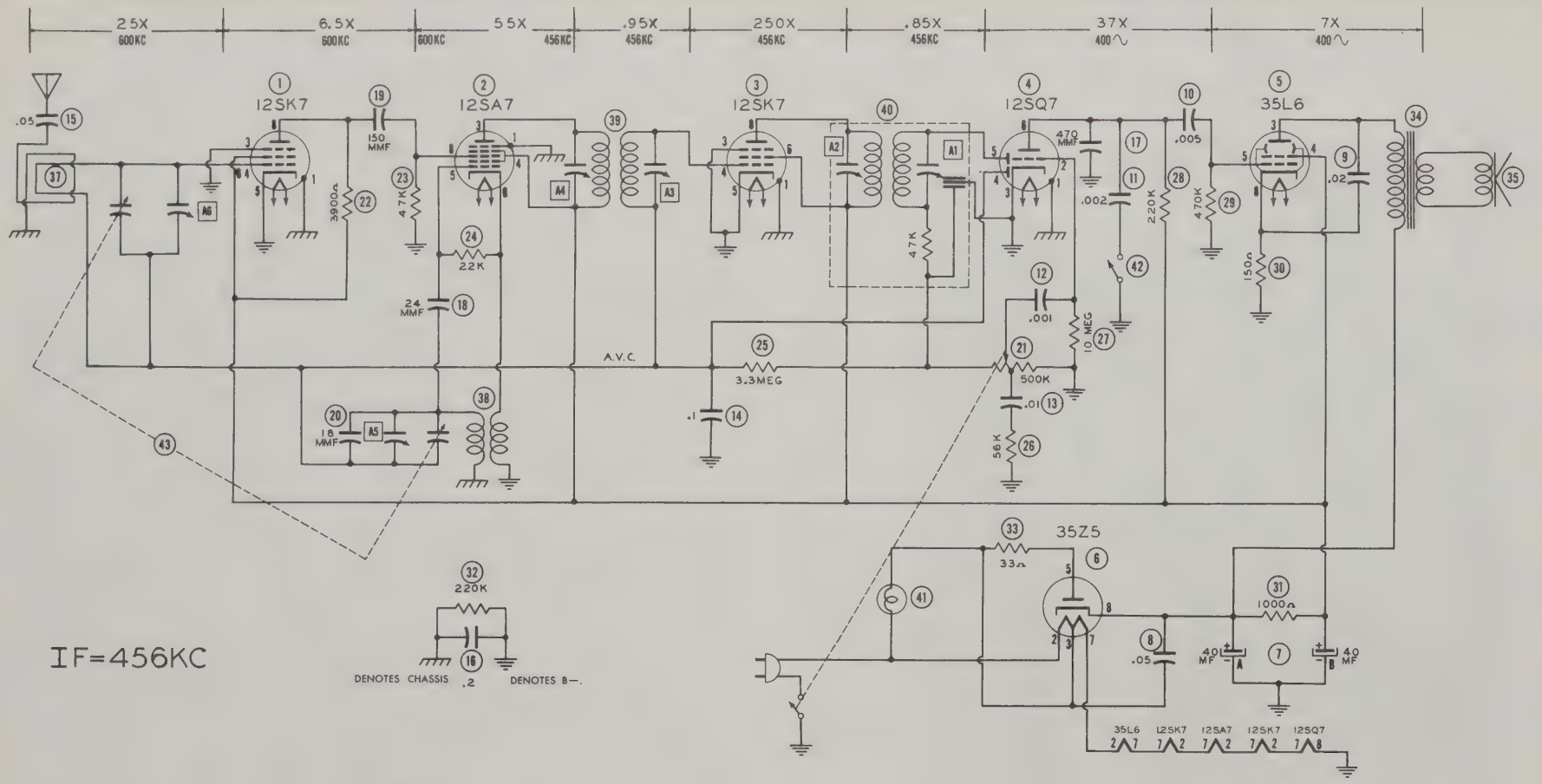
CHASSIS—BOTTOM VIEW



DELCO MODELS R-1226, R-1237

DATE 12/47 SET #29 FOLDER #4719-7

DELCO MODELS R-1226, R-1237



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SK7GT	0V.	39VAC	0V.	-.4VDC	0V.	80VDC	50VAC	47VDC
2	12SA7	0V.	26VAC	80VDC	80VDC	-7.3VDC§	0V.	39VAC	-.9VDC
3	12SK7GT	0V.	13VAC	0V.	-.4VDC	0V.	80VDC	26VAC	80VDC
4	12SQ7	0V.	-.7VDC	0V.	-.4VDC	-.4VDC	57VDC	13VAC	0V.
5	35L6GT	0V.	85VAC	107VDC	80VDC	0V.	0V.	50VAC	5.7VDC
6	35Z5GT	0V.	117VAC	112VAC	0V.	108VAC	0V.	85VAC	113VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SK7GT	220KΩ	38Ω	0Ω	3.5 Meg.	0Ω	40KΩ	52Ω	44KΩ
2	12SA7	220KΩ	26Ω	40KΩ	40KΩ	2KΩ	3Ω	32Ω	47KΩ
3	12SK7GT	220KΩ	12Ω	0Ω	3.5 Meg.	0Ω	40KΩ	26Ω	40KΩ
4	12SQ7	220KΩ	10 Meg.	0Ω	3.5 Meg.	56KΩ	260KΩ	12Ω	0Ω
5	35L6GT	220KΩ	87Ω	40KΩ	40KΩ	450KΩ	60KΩ	52Ω	150Ω
6	35Z5GT	220KΩ	112Ω	110Ω	INF.	140Ω	INF.	87Ω	40KΩ

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RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

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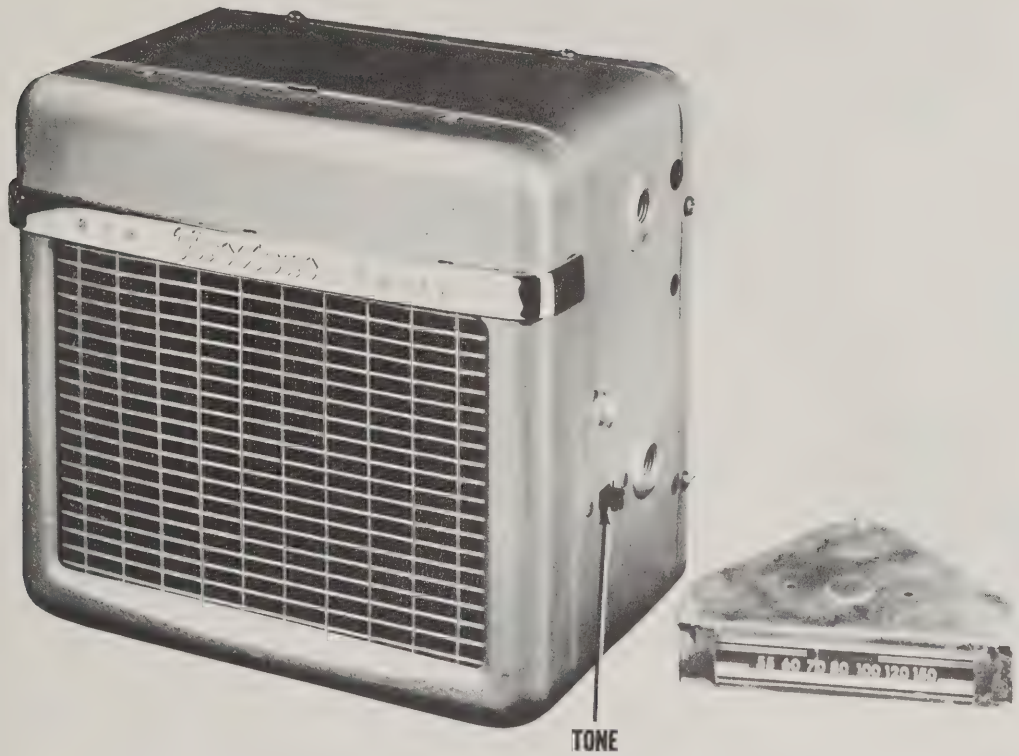
4719-7

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

FIRESTONE (AIR CHIEF) MODEL
4-B-6 (Code 117-7-PM18)



FIRESTONE (AIR CHIEF) MODEL
4-B-6 (Code 117-7-PM18)

FIRESTONE (AIR CHIEF) MODEL 4-B-6

TRADE NAME	Firestone (Air Chief) Model 4-B-6 (Code 177-7-PM18).
SUPPLIER	The Firestone Tire & Rubber Co., 1200 Firestone Parkway, Akron, Ohio
TYPE SET	Battery Operated Automotive Superheterodyne Receiver
TUBES (SIX)	Types, 6SK7GT RF Amp., 6SA7 Converter, 6SK7GT IF Amp., 6SQ7GT Det.-AVC-AF, 6V6GT Power Output, 0Z4 or 6X5GT Rectifier.
POWER SUPPLY	6 Volt Storage Battery
TUNING RANGE—BROADCAST	540-1600KC RATING 5.4 Amp. @ 6 Volts DC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin 4 (grid) 6SK7 (RF Tube #1). Low side to chassis.	455KC	Tuning slugs fully in.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output.
2	.1 MFD.	"	"	"	"	A5	Adjust for minimum output.
3	100MMFD	High side to ant. socket. Low side to chassis.	1600KC	Tuning slugs fully out.	"	A6,A7, A8	Adjust for maximum output.
4	100MMFD	"	540KC	Tuning slugs fully in.	"	A9	Adjust for maximum output. Repeat Step 3.
5	100MMFD	"	600KC	Tune for maximum output.	"	A9	Rock tuning slugs and adjust for maximum output. Repeat Steps 3 through 5 until no further improvement can be made.

If after Step 5 sensitivity is low repeat Steps 3 through 5 performing the following Step between Steps 4 & 5 using the following dummy for all steps. Connect 50 MMF. capacitor in series with high side of sig. gen. to receiver ant. socket. Connect a 40 MMF. cap. from ant. socket to chassis. These values are critical and must be used to insure proper tracking.

4A	See above note	See above note.	1400KC	Tune for maximum output.	Across voice coil	A10,A11	Adjust for maximum output. Cement core adjustments to prevent changing of adjustment due to vibration.

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DATE 12/47 SET #29 FOLDER #4719-8

PARTS LIST AND DESCRIPTIONS

FIRESTONE (AIR CHIEF)
MODEL 4-B-6

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIR CHIEF PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6SK7GT	6SK7GT	8N	
2	Converter	6SA7	6SA7	8R	
3	IF Amp.	6SK7GT	6SK7GT	8N	
4	Det.-AVC-AF	6SQ7GT	6SQ7GT	8Q	
5	Power Output	6V6GT	6V6GT	7AC	
6A	Rectifier	0Z4	0Z4	4RM	
B	"	6X5GT	6X5GT	6S	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIR CHIEF PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	20	350							■ Filter
B	10	350	25099	FP330	DY-312	EL-212	AF32K4A	UP2235C	▲ "
C	20	25							Output Cathode Bypass
8	.006	1200	25110	OW344	TM-16-006	TR-26	1684-006	MD16D6	Output Plate Bypass
9	.01	400	25108	TP421	S-4-01	TC-11	484-01	DT4S1	Audio Coupling
10	.005	400	25104	TP408	S-6-005	TC-25	484-005	DT6D5	Tone Compensation
11	.005	400	25104	TP408	S-6-005	TC-25	484-005	DT6D5	Audio Coupling
12	.002	200	25119	TP405	S-6-002	TC-22	484-002	DT6D2	Tone Compensation
13	.05	200	25102	TP426	S-4-05	TC-15	484-05	DT4S5	IF Cathode Bypass
14	.05	200	25102	TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter
15	.05	200	25102	TP426	S-4-05	TC-15	484-05	DT4S5	Screen Bypass
16	.05	200	25102	TP426	S-4-05	TC-15	484-05	DT4S5	RF Cathode Bypass
17	.01	200	25112	TP421	S-4-01	TC-11	484-01	DT4S1	RF Coupling
18	.5	100	25118		SHH-2				Hash Filter
19	.5	100	25118		SHH-2				" "
20	.007	1600	25109	OW345	TM-16-007	TR-27	1684-0075	MD16D7	Buffer
21	.5	400	25366	TP431	SDH-4-5	TC-5	484-5	DT4P5	RF Bypass Power Supply
22	100	500	25188	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	AF Plate Bypass
23	420		25124						Fixed Trimmer-Silver
24	100	500	25188	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	Osc. Grid Capacitor
25	500	500	25189	MC245	MO.5_35	1FM-35	1468-0005	5W5T5	Fixed Padder
26	20	500	25121			MS-42		5W5Q2	Fixed Trimmer
27	500	500	25189	MC245	MO.5-35	1FM-35	1468-0005	5W5T5	RF Coupling
28	100	500	25188	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	Fixed Padder
29	500	500	25189	MC245	MO.5-35	1FM-35	1468-0005	5W5T5	Filament Bypass

CONTROLS

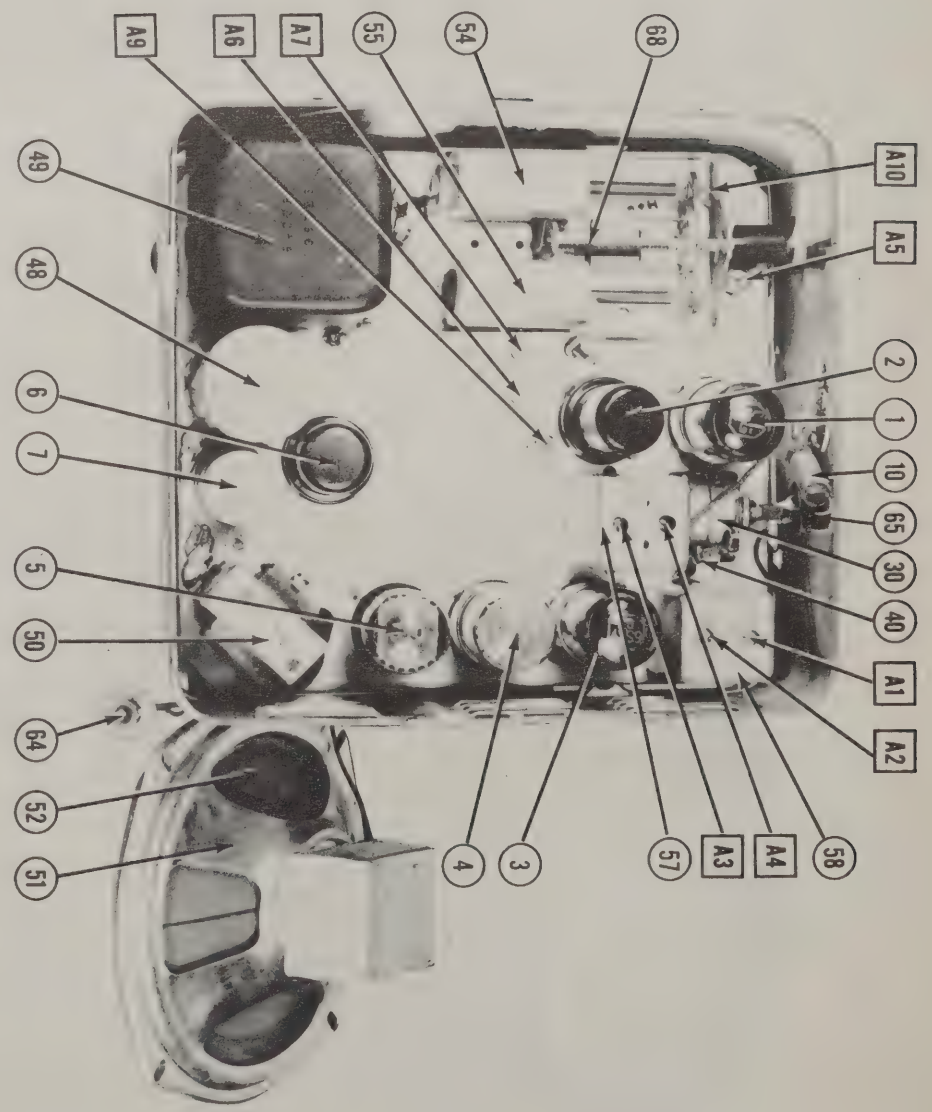
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIR CHIE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
30A	500KΩ	½	78042	TM233	D16-133X	AT-88	Volume Control
B	Shaft		Not Req.	SS23	A*	RS-2*	Attach to 30A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "
31	80-800Ω	1	78146				Sensitivity Control

*File shaft to duplicate original.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIR CHIEF PART No.	IRC PART No.	IDENTIFICATION CODES
32	100KΩ	½	77214	BTS-100K	Br.-Blk.-Yl. Antenna Loading
33	1 Meg.	½	77218	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
34	1 Meg.	½	77218	BTS-1 Meg.	Br.-Blk.-Grn. " "
35	10KΩ	½	77212	BTS-10K	Br.-Blk.-Or. RF Plate Load
36	1 Meg.	½	77218	BTS-1 Meg.	Br.-Blk.-Grn. Converter Grid
37	22KΩ	½	77266	BTS-22K	Red-Red-Or. Oscillator Grid
38	22KΩ	1	77069	BTA-22K	Red-Red-Or. Screen Dropping
39	100Ω	½	77258	BW-½-100	Br.-Blk.-Br. IF Cathode
40	33KΩ	½	77267	BTS-33K	Or.-Or.-Or. Tone Compensation
41	10 Meg.	½	77274	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
42	220KΩ	½	77216	BTS-220K	Red-Red-Yl. AF Plate Load
43	470KΩ	½	77217	BTS-470K	Yl.-Vi.-Yl. Output Grid
44	330Ω	½	77260	BW-½-330	Or.-Or.-Br. Output Cathode
45	1000Ω	1	77123	BTA-1000	Br.-Blk.-Red Filter
46	100Ω	½	77258	BW-½-100	Br.-Blk.-Br. Hash Suppressor
47	100Ω	½	77258	BW-½-100	Br.-Blk.-Br. " "

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA: AIR CHIEF PART No.	MALLORY PART No.	RADIART PART No.	INSTALLATION NOTES
48	Interrupter	6.3	115~	76001	859	5301	

TRANSFORMER (VIBRATOR)

ITEM No.	RATING: PRI.	SEC. 1	SEC. 2	SEC. 3	REPLACEMENT DATA: AIR CHIEF PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
49	5.5V DC @ 3.0A	530V CT @ .047A			94078	P-4060†	T22R20†	

†Drill new mounting holes.

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	IMPEDANCE SEC.	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: AIR CHIEF. PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
50	3500Ω	3.5Ω	340Ω	.5Ω	94229	A-3850	T22S46	A-2900	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: AIR CHIEF PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.		ST-109		
51	PM	3.5Ω	81154	Mod. P6-W		
	CONE DIA.	VC DIA.				
52	6"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: AIR CHIEF PART No.	MEISSNER PART No.	
53	Ant. Coil		7.5Ω			Items 53, 54 and 55 are slug tuned and are part of tuner assembly.
54	RF Coil		7.5Ω			
55	Osc. Coil		2.5Ω			
56	Osc. Sh.Coil		3.5Ω	38838		
57	Input IF	13Ω	13Ω	38889	16-6658	
58	Output IF	13Ω		38890		
59	Wave Trap		INF.	38733		
60	RF Choke		0Ω	38279		
61	" "		0Ω	38277		
62	" "		0Ω	38278		
63	" "		0Ω			

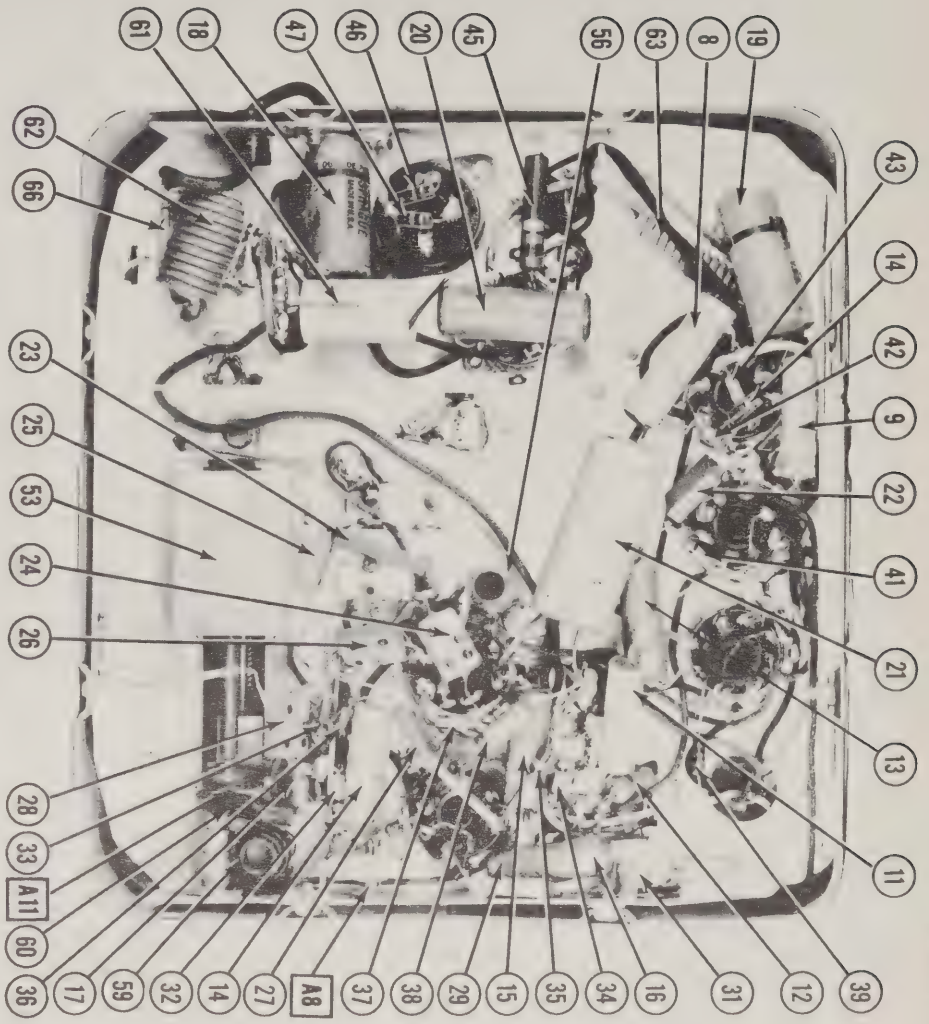
DIAL LIGHT

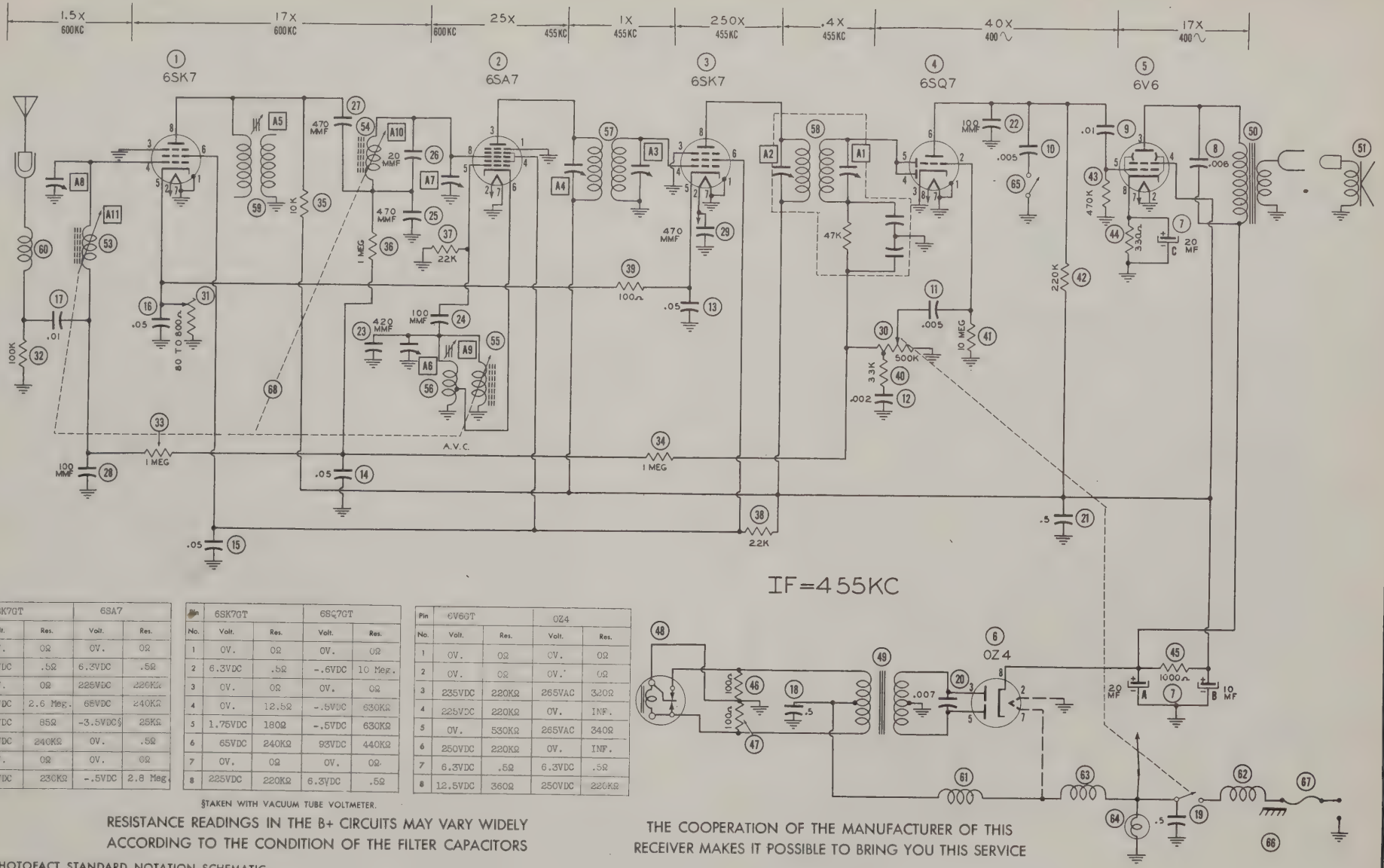
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: AIR CHIEF PART No.	MERIT PART No.	INSTALLATION NOTES
64	Bayonet	7.5	0.2	White	11173		Type 51

MISCELLANEOUS

ITEM No.	PART NAME	AIR CHIEF PART No.	NOTES
65	Tone Switch	90071	(SPST)
66	Spark Plate	24100	
67	Fuse	48012	15 Amp.
68	Tuner Assembly	38001	
A6 } A7	Trimmer Strip	26270	{Osc. Adj. {RF Adj.
A8	Trimmer	26236	Ant. Adj.

CHASSIS—BOTTOM VIEW





Pin	6SK7GT		6SA7	
No.	Volt.	Res.	Volt.	Res.
1	0V.	0Ω	0V.	0Ω
2	6.3VDC	.5Ω	6.3VDC	.5Ω
3	0V.	0Ω	226VDC	226KΩ
4	-.1VDC	2.6 Meg.	68VDC	240KΩ
5	1.1VDC	85Ω	-3.5VDC§	25KΩ
6	6.5VDC	240KΩ	0V.	.5Ω
7	0V.	0Ω	0V.	0Ω
8	180VDC	230KΩ	-.5VDC	2.8 Meg.

Pin	6SK7GT		6SQ7GT	
No.	Volt.	Res.	Volt.	Res.
1	0V.	0Ω	0V.	0Ω
2	6.3VDC	.5Ω	-.6VDC	10 Meg.
3	0V.	0Ω	0V.	0Ω
4	0V.	12.5Ω	-.5VDC	630KΩ
5	1.75VDC	180Ω	-.5VDC	630KΩ
6	65VDC	240KΩ	93VDC	440KΩ
7	0V.	0Ω	0V.	0Ω
8	225VDC	220KΩ	6.3VDC	.5Ω

Pin	6V6GT		0Z4	
No.	Volt.	Res.	Volt.	Res.
1	0V.	0Ω	0V.	0Ω
2	0V.	0Ω	0V.	0Ω
3	235VDC	220KΩ	265VAC	320Ω
4	225VDC	220KΩ	0V.	INF.
5	0V.	530KΩ	265VAC	340Ω
6	250VDC	220KΩ	0V.	INF.
7	6.3VDC	.5Ω	6.3VDC	.5Ω
8	12.5VDC	360Ω	250VDC	220KΩ

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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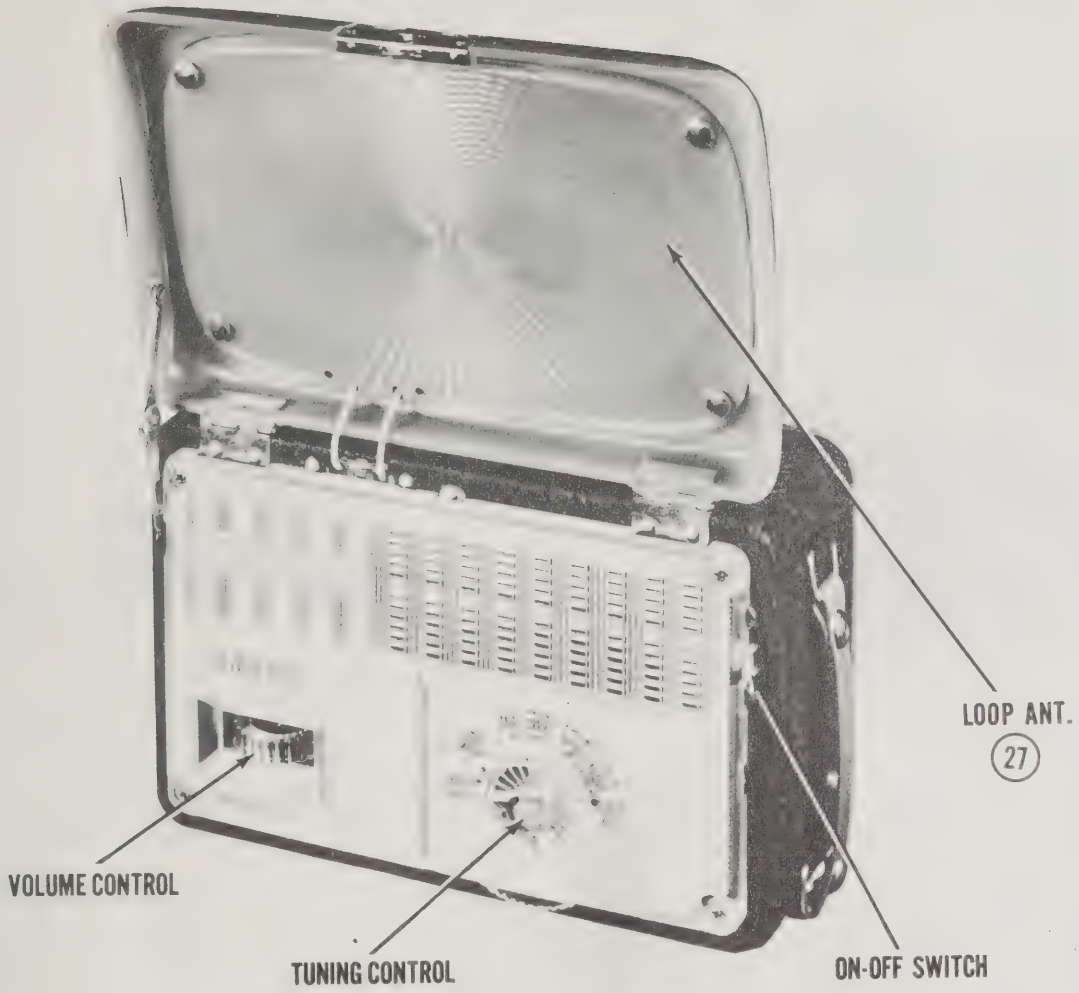
4719-8

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative by connecting negative (-) 3 volts to the AVC line.

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Battery voltage maintained at 6.3 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

GAROD MODELS 4A-1, 4A-2
BATTERY OPERATED



GAROD MODELS 4A-1, 4A-2
BATTERY OPERATED

TRADE NAME	Garod, Model 4A-1, 4A-2
MANUFACTURER	Garod Radio Corp., 70 Washington St., Brooklyn 1, N.Y.
TYPE SET	Battery Operated Portable Superheterodyne with Loop Antenna
TUBES (FOUR)	Types, 1R5 Converter, 1T4 IF Amp., 1S5 Det.-AVC-AF, 3S4 Power Output.
POWER SUPPLY RATING	1.5 Volts "A" Supply and 67.5 Volts "B" Supply 260MA @ 1.5V DC and 9MA @ 67.5V DC
TUNING RANGE—BROADCAST	540-1650KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Extend loop leads and solder to original points.
Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to rear stator of tuning cap. Low side to chassis.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output.
2		Place sig. gen. leads near loop of receiver.	1650KC	"	"	A5	" " " "
3		"	1500KC	Tune for maximum output.	"	A6	" " " "
4		"	600KC	"	"	A7	Rock tuning cap. and adjust for maximum output. Repeat Steps 2, 3 and 4 until no further improvement can be made.
5	Reinstall receiver in case and tune in a weak station near 1500KC. Adjust A6 for maximum volume.						

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DATE 12/47 SET #29 FOLDER #4719-9

PARTS LIST AND DESCRIPTIONS

MARC MODEL 4A-1, 4A-2
BATTERY OPERATED

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: GAROD PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	1R5	1R5	7AT	
2	IF Amp.	1T4	1T4	5AR	
3	Det.-AVC-AF	1S5	1S5	6AU	
4	Power Output	3S4	3S4	7AB	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: GAROD PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
5	8	100	5.417		M-8-150			BR815	Power Supply Bypass
6	.001	150			TTR-1.5-001			ZZ1D1	Output Plate Bypass
7	.002	200			TTR-1.5-002			ZZ1D2	Audio Coupling
8	.02	150			TTR-1.5-02			ZY1S2	AF Screen Bypass
9	.002	200			TTR-1.5-002			ZZ1D2	Audio Coupling
10	.02	150			TTR-1.5-02			ZY1S2	AVC Filter
11	.02	150			TTR-1.5-02			ZY1S2	IF Screen Bypass
12	47								AF Plate Bypass Cer
13	47								Diode RF Filter "
14	47								Osc. Grid Cap. "

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: GAROD PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
15	2 Meg.	½	8.204				Volume Control

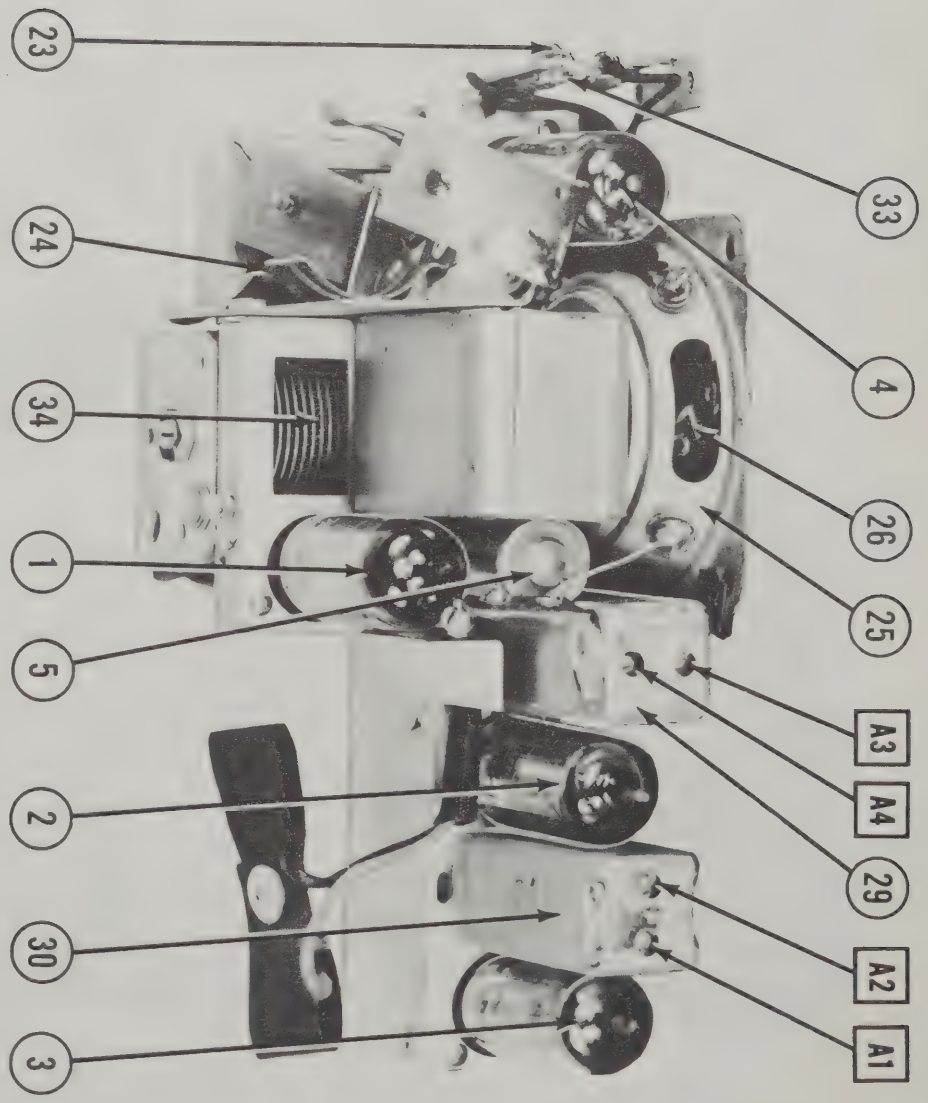
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: GAROD PART No.	IRC PART No.	IDENTIFICATION CODES
16	100KΩ	1/8		BTS-100K	Br.-Blk.-Yl. Oscillator Grid
17	4700Ω	1/8		BTS-4700	Yl.-Vi.-Red Screen Dropping
18	3.3 Meg.	1/8		BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
19	10 Meg.	1/8		BTS-10 Meg.	Br.-Blk.-Blue AF Grid
20	4.7 Meg.	1/8		BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Screen Dropping
21	1 Meg.	1/8		BTS-1 Meg.	Br.-Blk.-Grn. AF Plate Load
22	3.3 Meg.	1/8		BTS-3.3 Meg.	Or.-Or.-Grn. Output Grid
23	820Ω	1/8		BTS-820	Gray-Red-Br. Bias

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: GAROD PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
24	9000Ω	3.3Ω	670Ω	.5Ω	9.207			A-2999	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: GAROD PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.				
25	PM	3.3Ω	30.315			
	CONE DIA.	VC DIA.				
26	2-7/16"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: GAROD PART No.	MEISSNER PART No.	
27	Loop Ant.		4.5Ω	1.460		
28	Osc. Coil	2Ω	11Ω	1.462		
29	Input IF	36Ω	36Ω	1.412		
30	Output IF	36Ω	34Ω	1.413		

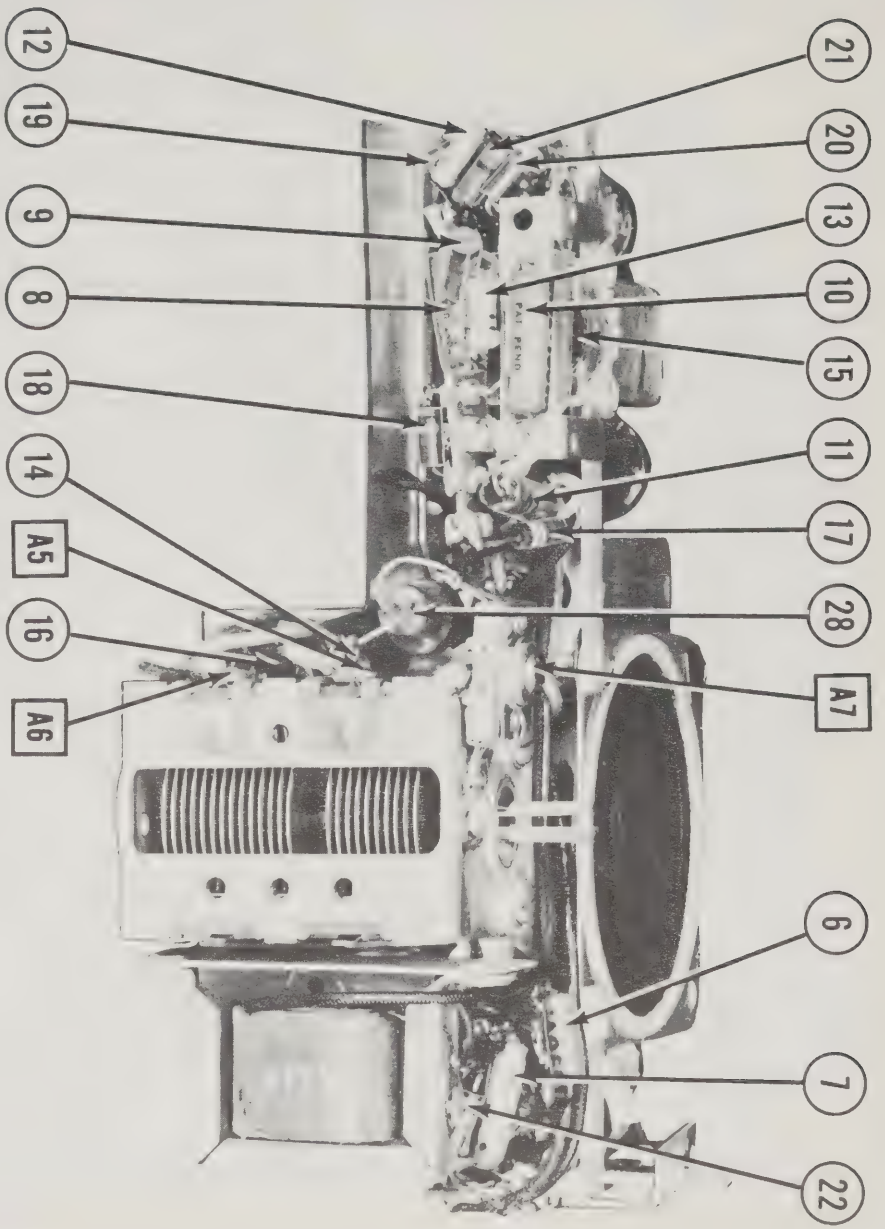
BATTERIES

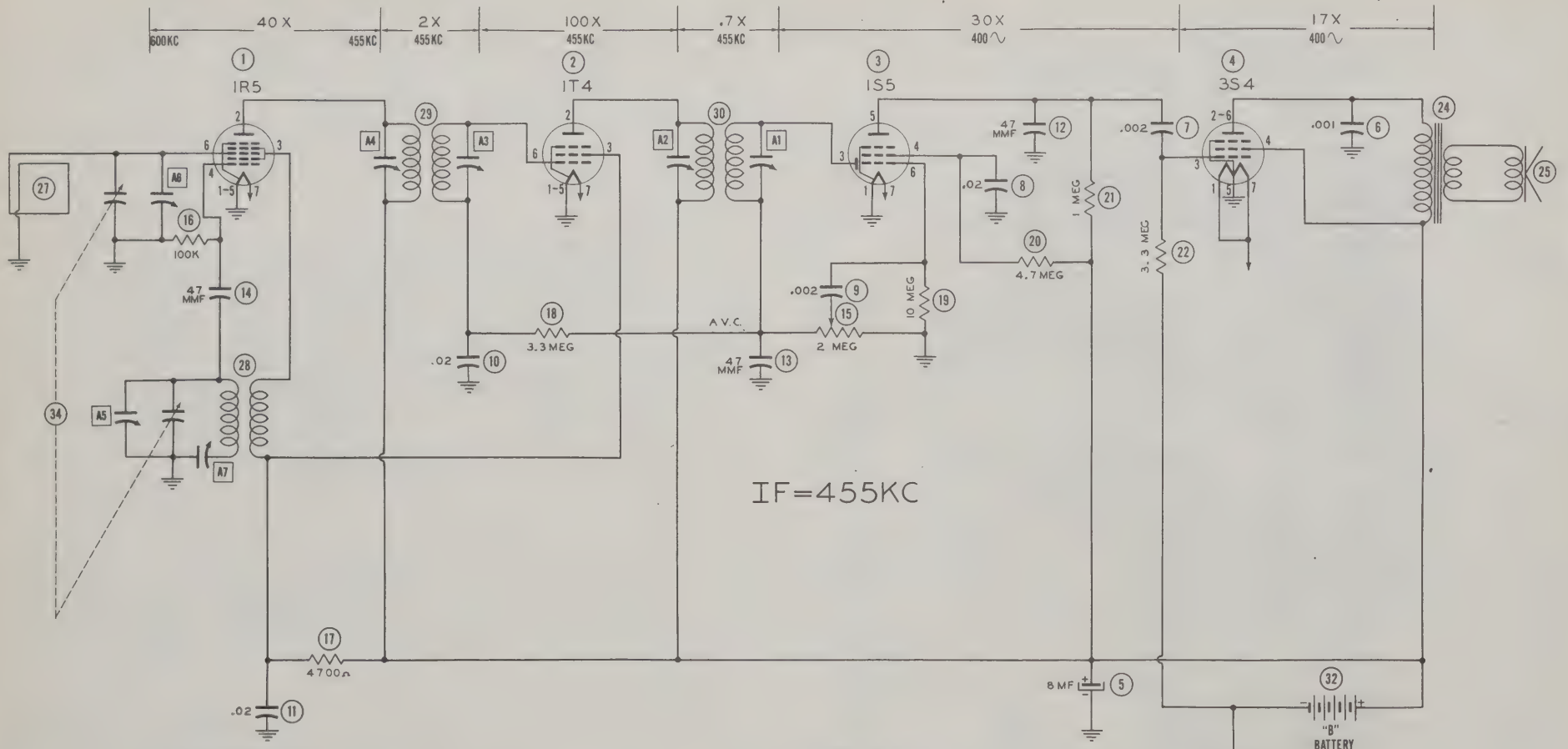
ITEM No.	VOLTAGE	GAROD PART No.	EVEREADY "A"	EVEREADY "B"	EVEREADY "A-B"	INSTALLATION NOTES
31	1½V "A"		#950			
32	67½V "B"			#467		

MISCELLANEOUS

ITEM No.	PART NAME	GAROD PART No.	NOTES
33	On-Off Switch	11.214	
34	2 Gang Var. Cap.	2.212	(27-348 MMF, 13-241 MMF)

CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1R5	0V.	57VDC	47VDC	-8.5VDC§	0V.	0V.	1.5VDC
2	1T4	0V.	57VDC	47VDC	57VDC	0V.	-.1VDC	1.5VDC
3	1S5	0V.	57VDC	.2VDC	20VDC	20VDC	-.1VDC	1.5VDC
4	3S4	1.5VDC	55VDC	-.9VDC	57VDC	0V.	55VDC	1.5VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1R5	0Ω	120KΩ	125KΩ	100KΩ	0Ω	4.5Ω	*
2	1T4	0Ω	120KΩ	125KΩ	120KΩ	0Ω	5 Meg.	*
3	1S5	0Ω	120KΩ	1.7 Meg.	4.8 Meg.	1.1 Meg.	10 Meg.	*
4	3S4	*	120KΩ	3 Meg.	120KΩ	0Ω	120KΩ	*

§TAKEN WITH VACUUM TUBE VOLTMETER.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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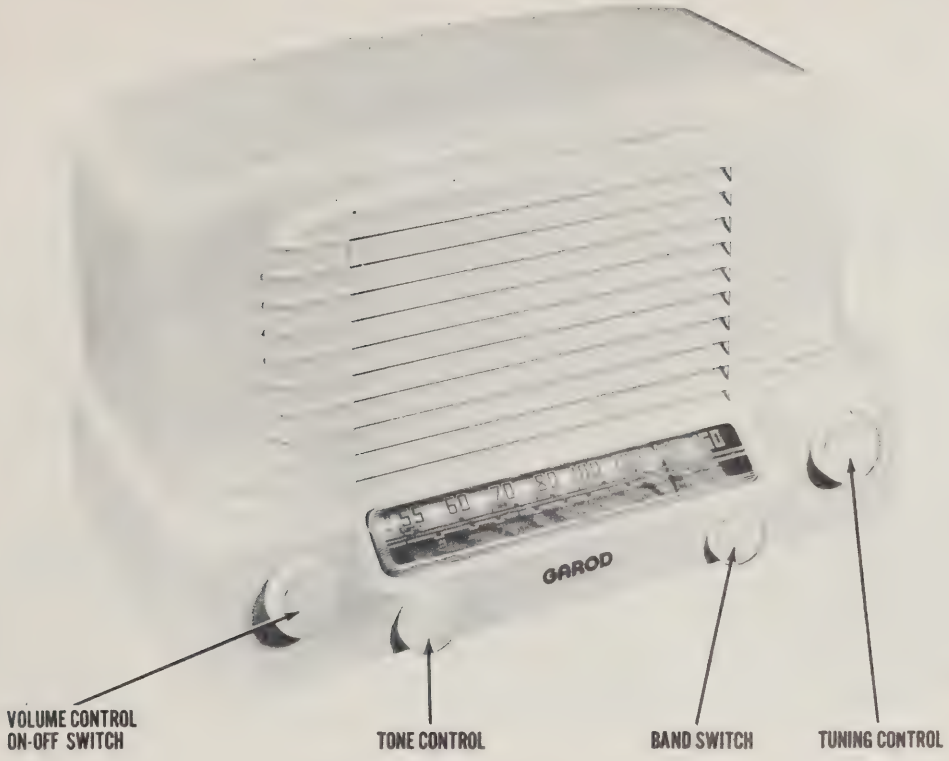
4719-9

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative by shorting to chassis.

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
5 - Volume control at maximum, no signal applied for voltage



GAROD MODEL 62B

TRADE NAME	Garod, Model 62B
MANUFACTURER	Garod Radio Corp., 70 Washington St., Brooklyn 1, N.Y.
TYPE SET	AC-DC Operated 2 Band Superheterodyne Receiver with Loop Ant.
TUBES (SIX)	Types, 6BJ6 RF Amp., 12BE6 Converter, 6BJ6 IF Amp., 12AT6 Det.-AVC-AF, 50B5 Power Output, 35W4 Rectifier.
POWER SUPPLY	105-125 Volts AC-DC — RATING .230 Amps. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1650KC — **SHORT WAVE** 5.7-18.5MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not, connect a .1 MFD capacitor in series with low side of signal generator and chassis. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to front stator of tuning cap. Low side to chassis.	455KC	BC (clock-wise)	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD. to hum modulation.
2		Loop	1650KC	"	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3		"	1500KC	"	Tune for maximum output.	"	A6,A7	Adjust for maximum output.
4		"	600KC	"	"	"	A8	Rock tuning cap. and adjust for maximum output. Repeat Steps 2, 3 & 4 until no further improvement can be made.
5	400Ω carbon res.	High side to ext. ant. lead. Low side to chassis.	18.5MC	SW (counter-clockwise)	Tuning cap. fully open.	"	A9	Adjust for maximum output.
6	"	"	16MC	"	Tune for maximum output.	"	A10, A11	Rock tuning cap. and adjust for maximum output.

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DATE 12/47 SET #29 FOLDER #4719-10

PARTS LIST AND DESCRIPTIONS

GAROD MODEL 62B

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: GAROD PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6BJ6	6BJ6		
2	Converter	12BE6	12BE6	7CH	
3	IF Amp.	6BJ6	6BJ6		
4	Det.-AVC-AF	12AT6	12AT6	7BT	
5	Power Output	50B5	50B5	7BZ	
6	Rectifier	35W4	35W4	5B	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: GAROD PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	20	150		TC45		UT-201	AF844D†		Filter
B	80	150	5.400-7	FP357†	DY-804020-15(	EL-340†	PRS150-50	UP84215	■ Filter
C	40	150			150				▲ "
8	10	25		TC-22	M-10-25	TA-10	PRS25-10	BR102A	Output Cathode Bypass
9	.05	400		TP426	MPH-6-05	TC-15	484-05	DT4S5	Line Filter
10	.01	200		TP421	S-4-01	TC-11	484-01	DT4S1	Audio Coupling
11	.01	200		TP421	S-4-01	TC-11	484-01	DT4S1	" "
12	.002	600		TP405	S-6-002	TC-22	684-002	DT6D2	Tone Compensation
13	.02	200		TP423	S-4-02	TC-12	484-02	DT4S2	IF Cathode Bypass‡
14	.02	200		TP423	S-4-02	TC-12	484-02	DT4S2	AVC Filter
15	.02	200		TP423	S-4-02	TC-12	484-02	DT4S2	" "
16	.02	200		TP423	S-4-02	TC-12	484-02	DT4S2	" "
17	.02	200		TP423	S-4-02	TC-12	484-02	DT4S2	RF Cathode Bypass
18	.005	600		TP408	S-6-005	TC-25	684-005	DT6D5	Ant. Coupling
19	.02	200		TP423	S-4-02	TC-12	484-02	DT4S2	AVC Filter
20	.2	400		TP429	S-4-2	TC-2	484-.2	DT4P2	Conv. Screen Bypass
21	.02	400		TP423	S-4-02	TC-12	484-02	DT4S2	Output Plate Bypass
22	220			MC240	MO.5-325	1FM-325	1468-00025	5W5T25	AF Plate Bypass Cer.
23	100	500		MC235	MO.5-31	1FM-31	1468-0001	5W5T1	Diode RF Filter
24	2750	500							Fixed Padder
25	100			MC235	MO.5-31	1FM-31	1468-0001	5W5T1	Osc. Grid Cap. Cer.
26	100	500		MC235	MO.5-31	1FM-31	1468-0001	5W5T1	RF Bypass

†Parallel sections to obtain desired capacity. ‡Not used in all models.

CONTROLS

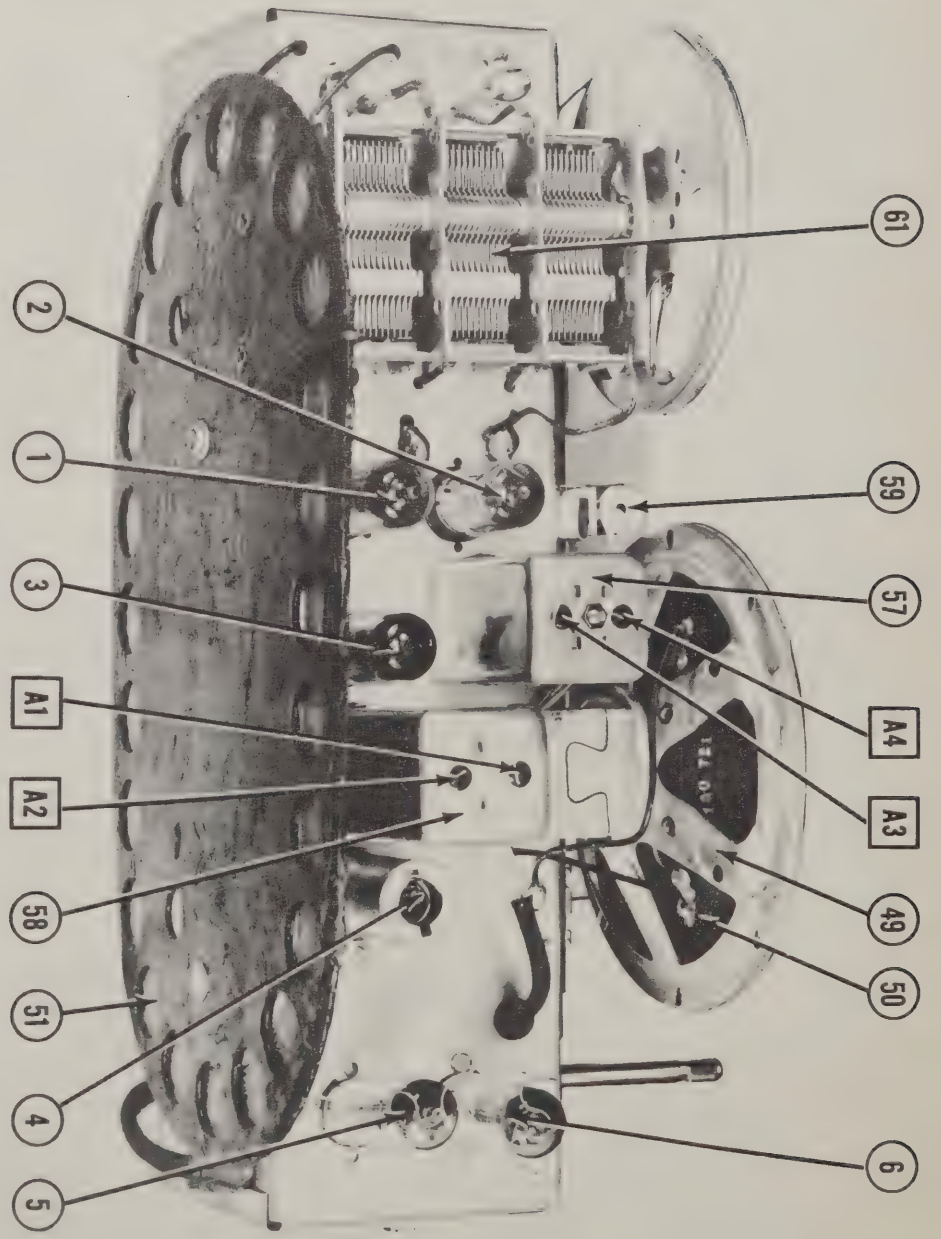
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: GAROD PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
27A	1 Meg.	½	8-200-4	MK402	D13-137	AM-63-Z	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 27A per instructions
C	Switch		"	M26	41	SW-A	" " " "
28	1 Meg.	½	8-203-1				Tone Control

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: GAROD PART No.	IRC PART No.	IDENTIFICATION CODES
29	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
30	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
31	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
32	68Ω	½		BW-½-68	Blue-Gray-Blk. RF Cathode
33	8200Ω	½		BTS-8200	Gray-Red-Red Voltage Dropping
34	22KΩ	½		BTS-22K	Red-Red-Or. Osc. Grid
35	47Ω	½		BW-½-47	Yl.-Vi.-Blk. Parasitic Suppressor
36	4700Ω	½		BTS-4700	Yl.-Vi.-Red Converter Screen Dropping
37	330Ω	½		BW-½-330	Or.-Or.-Br. IF Cathode
38	470Ω	½		BTS-470	Yl.-Vi.-Br. IF Cathode
39	4700Ω	½		BTS-4700	Yl.-Vi.-Red IF Filter - See Note 1
40	4.7 Meg.	½		BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Grid Load
41	220KΩ	½		BTS-220K	Red-Red-Yl. AF Plate Load
42	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Output Grid
43	150Ω	½		BW-½-150	Br.-Grn.-Br. Output Cathode
44	100Ω	½		BW-½-100	Br.-Blk.-Br. Filter
45	1000Ω	1		BTA-1000	Br.-Blk.-Red Filter
46	270Ω	½		BW-½-270	Red-Vi.-Br. Pilot Light Shunt
47	160Ω	5	6.206	AB4-200‡	Line Dropping-See Note 2

‡Set slider at 160Ω from one end.
Note 1 - Not used in all models. Note 2 - Used on 220V - 240V operation only.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA GAROD PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA THORDAR'N PART No.	REPLACEMENT DATA MERIT PART No.	INSTALLATION NOTES
48	16500Ω	3.2Ω	250Ω	.45Ω	2.200	A-3876	T28845	A-2928	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA GAROD PART No.	REPLACEMENT DATA JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.		ST-107*		*Drill and tap magnet frame.
49	PM	3.2Ω	30.311	Mod. P5-V		
	CONE DIA.	VC DIA.				
50	4-3/8"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

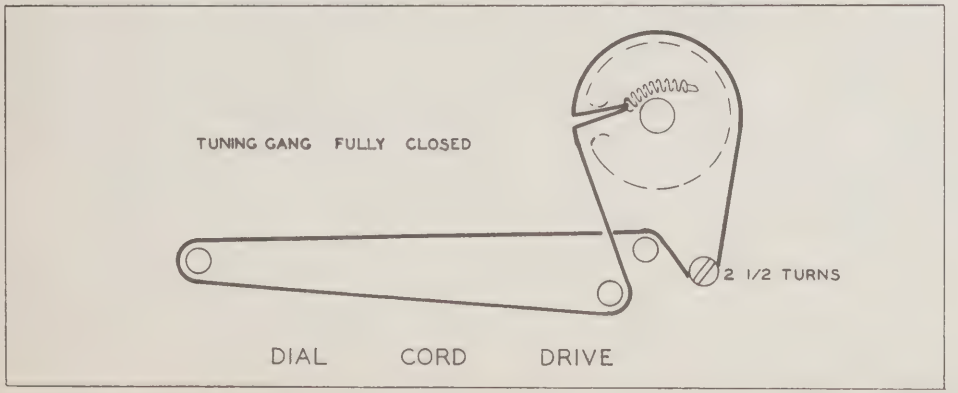
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA GAROD PART No.	REPLACEMENT DATA MEISSNER PART No.
51	Loop Ant.	.1Ω	1.2Ω	1.435	
52	SW Ant.Coil	4.5Ω	0Ω	1.433	14-1044
53	BC RF Coil	33Ω	4.5Ω	1.432	14-1027
54	SW RF Coil	4.7Ω	0Ω	1.434	14-1045
55	BC Osc.Coil	.5Ω	6Ω	1.436	14-1040
56	SW Osc.Coil		0Ω	1.431	14-1046
57	Input IF	42Ω	42Ω	1.259	16-6658
58	Output IF	42Ω	42Ω	1.409	16-6660

DIAL LIGHT

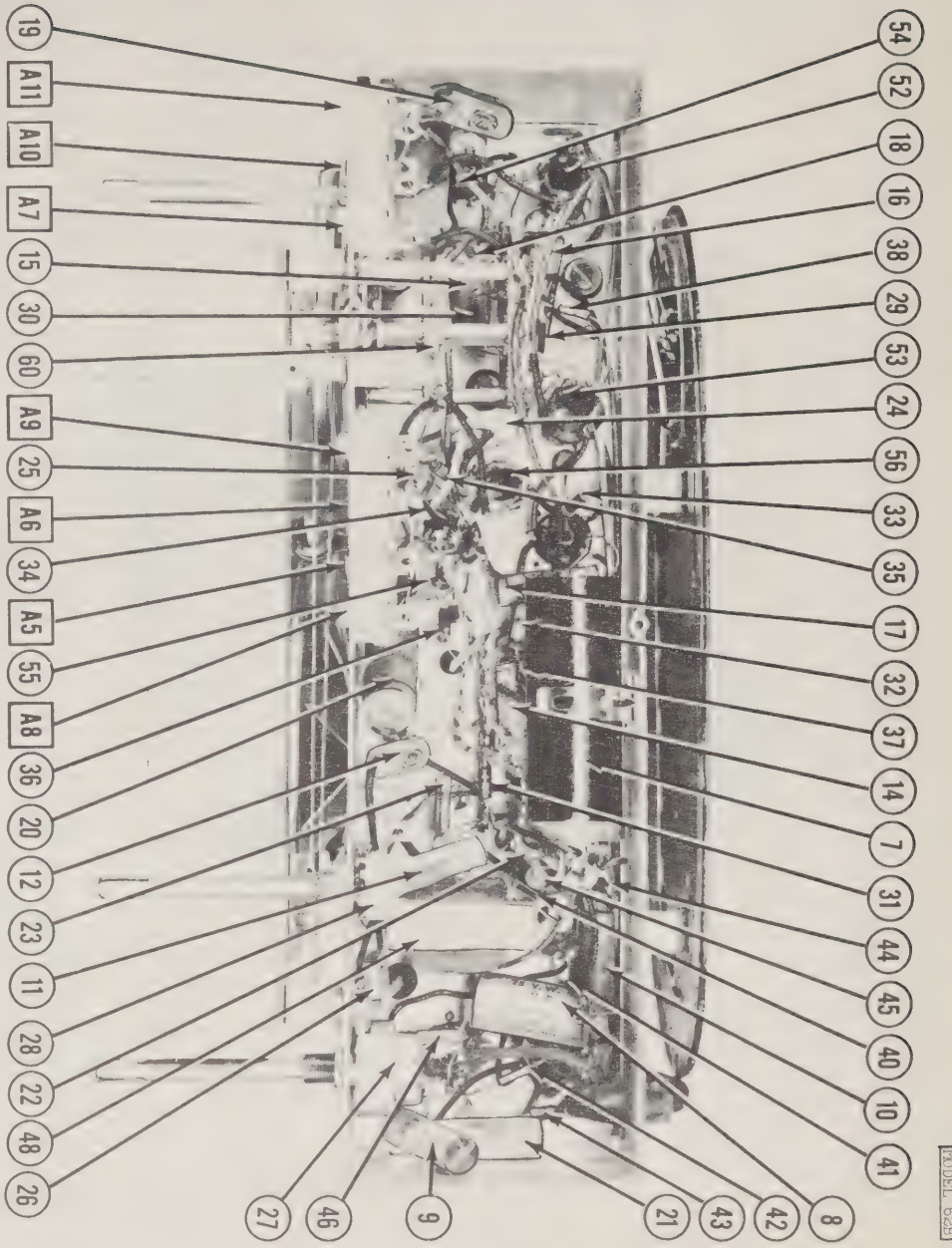
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA GAROD PART No.	REPLACEMENT DATA	INSTALLATION NOTES
59	Bayonet	6-8	0.15	Brown			Type 47

MISCELLANEOUS

ITEM No.	PART NAME	GAROD PART No.	NOTES
60	Bandswitch	11.209-1	
61	3 Gang Var.Cap.	2.302	(13-474MMF, 13-474MMF, 13-474MMF)
62	Line Cord Res.	20.211	380Ω 40W (220-240V)
A5	Trimmer Strip	4.106	BC Osc. Adj.
A6			BC RF Adj.
A8			BC Osc. Padder
A9			SW Osc. Adj.
A7	Trimmer Strip	4.107	BC Ant. Adj.
A10			SW RF Adj.
A11			SW Ant. Adj.



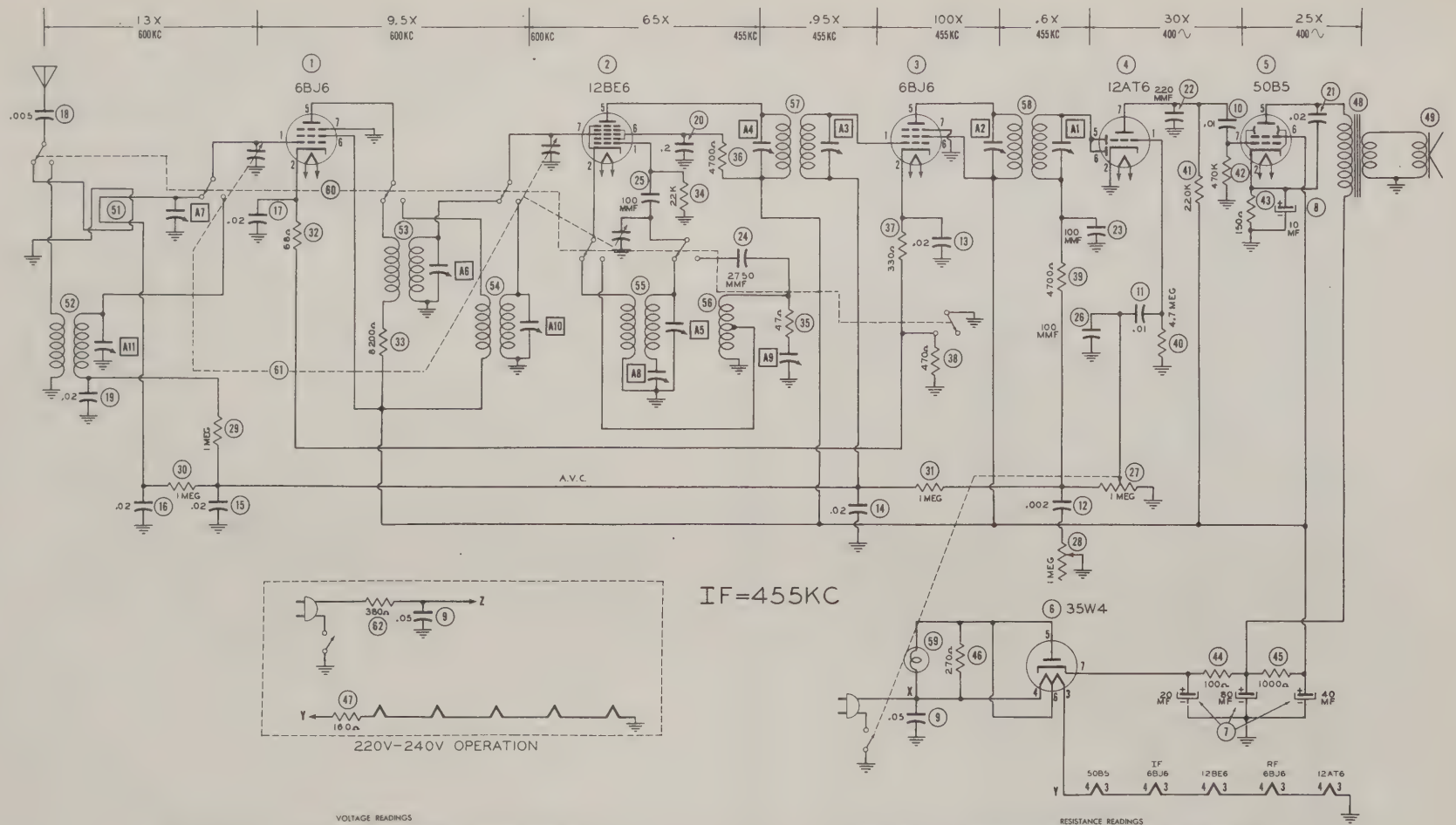
CHASSIS—BOTTOM VIEW



GAROD MODEL 62B

DATE 12/47 SET # 29 FOLDER #4719-10

GAROD MODEL 62B



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	6BJ6	-.1VDC	2.6VDC	13VAC	20VAC	80VDC	6.8VDC	0V.
2	12BE6	-5.4VDC§	0V.	2.8VAC	33VAC	98VDC	75VDC	0V.
3	6BJ6	-.1VDC	3.6VDC	33VAC	39VAC	58VDC	98VDC	0V.
4	12AT6	-.6VDC	0V.	0V.	13VAC	-.5VDC	-.5VDC	50VDC
5	50B5	0V.	5.5VDC	39VAC	86VAC	116VDC	98VDC	0V.
6	35W4	0V.	0V.	86VAC	117VAC	113VAC	113VAC	120VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	6BJ6	3 Meg.	500Ω	13Ω	20Ω	50KΩ	40KΩ	0Ω
2	12BE6	22KΩ	.7Ω	2.5Ω	3.2Ω	40KΩ	45KΩ	4.5Ω
3	6BJ6	2 Meg.	800Ω	3.2Ω	3.9Ω	40KΩ	40KΩ	0Ω
4	12AT6	5 Meg.	0Ω	0Ω	13Ω	1 Meg.	1 Meg.	260KΩ
5	50B5	470KΩ	150Ω	36Ω	82Ω	40KΩ	40KΩ	470KΩ
6	35W4	0Ω	0Ω	82Ω	115Ω	113Ω	113Ω	40KΩ

VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

§TAKEN WITH VACUUM TUBE VOLTMETER.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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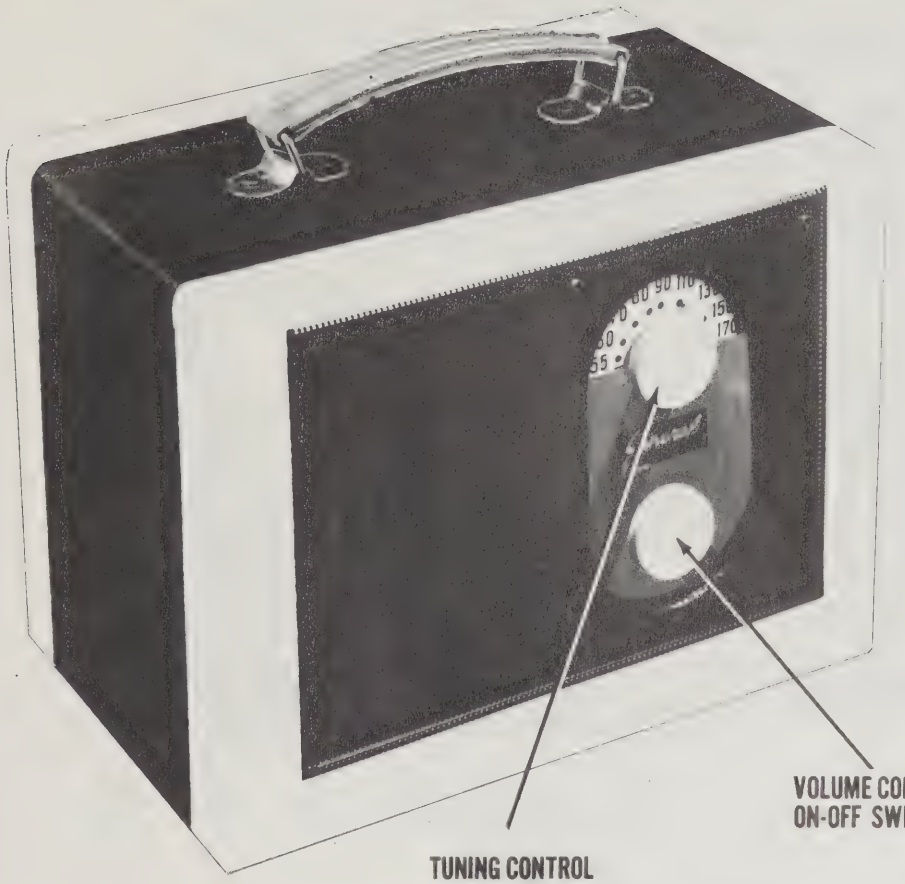
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

4719-10

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. **DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.**
2. **Socket connections are shown as bottom views.**
3. **Measured values are from socket pin to common negative.**
4. **Line voltage maintained at 117 volts for voltage readings.**
5. **Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.**
6. **Volume control at maximum, no signal applied for voltage measurements.**

GENERAL TELEVISION MODEL
26B5 BATTERY OPERATED



GENERAL TELEVISION MODEL
26B5 BATTERY OPERATED

GENERAL TELEVISION MODEL 26B5

TRADE NAME	General Television, Model 26B5
MANUFACTURER	General Television and Radio Corp., 2701-17 Lehmann Court, Chicago 14, Ill.
TYPE SET	Three Power Portable Superheterodyne with Loop Antenna
TUBES (FIVE)	Types, 1R5 Converter, 1U4 IF Amp., 1S5 Det.-AVC-AF, 3V4 Power Output, 117Z6GT Rectifier.
RATING	.20 Amps. @ 117V AC or 48MA @ 7½V DC and 12MA @ 90V DC
POWER SUPPLY	110-120 Volts AC-DC or 7½ Volt "A" Supply and 90 Volt "B" Supply
TUNING RANGE—BROADCAST	530-1750KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer parallel with base of dial. Use battery power when available. If AC power is used, use an isolation transformer when available. If not, connect a .1 MFD capacitor in series with low side of the signal generator and B-. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to rear stator of tuning cap. Low side to chassis.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If AC power is used without an isolation, transformer reduce dummy ant. to 200 MMF. to reduce hum modulation.
2		Loop	1500KC	1500KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3		"	1400KC	Tune for maximum output.	"	A6	Adjust for maximum output.

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DATE 12/47 SET #29 FOLDER #4719-11

PARTS LIST AND DESCRIPTIONS

General Television Model
26B5 Battery Operated

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		GEN. TELE. PART No.	STANDARD REPLACEMENT		
1	Converter	1R5	1R5	7AT	
2	IF Amp.	1U4	1U4	6AR	
3	Det.-AVC-AF	1S5	1S5	6AU	
4	Power Output	3V4	3V4	6BX	
5	Rectifier	117Z6GT	117Z6GT	7Q	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	GEN. TELE. PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	
6A	35	150		FP357		TA-440	PRSA150-40-	UP44415	Filter - Red
B	35	150				UT-401	40		" "
C	35	150					PRS150-40		" "
7A	70	25						BRH251	Fil. Bypass
B	70	25						BRH251	" "
8	.1	200		TP428	MPH-4-1	TC-1	484-.1	DT4P1	Line Filter
9	.002	600		TP405	S-6-002	TC-22	684-002	DT6D2	Output Plate Bypass
10	.01	400		TP421	S-4-01	TC-11	484-01	DT4S1	Audio Coupling
11	.01	400		TP421	S-4-01	TC-11	484-01	DT4S1	AF Screen Bypass
12	.01	400		TP421	S-4-01	TC-11	484-01	DT4S1	Audio Coupling
13	.02	400		TP423	S-4-02	TC-12	484-02	DT4S2	AVC Filter
14	.01	400		TP421	S-4-01	TC-11	484-01	DT4S1	Osc. Anode Decoup.
15	.05	600		TP415	S-6-05	TC-15	684-05	DT6S5	Fil. Bypass
16	100	500		MC235	MO.5-31	1FM-31	1468-0001	5W5T1	AF Plate Bypass
17	250	500		MC240	MO.5-325	1FM-325	1468-00025	5W5T25	Diode RF Filter

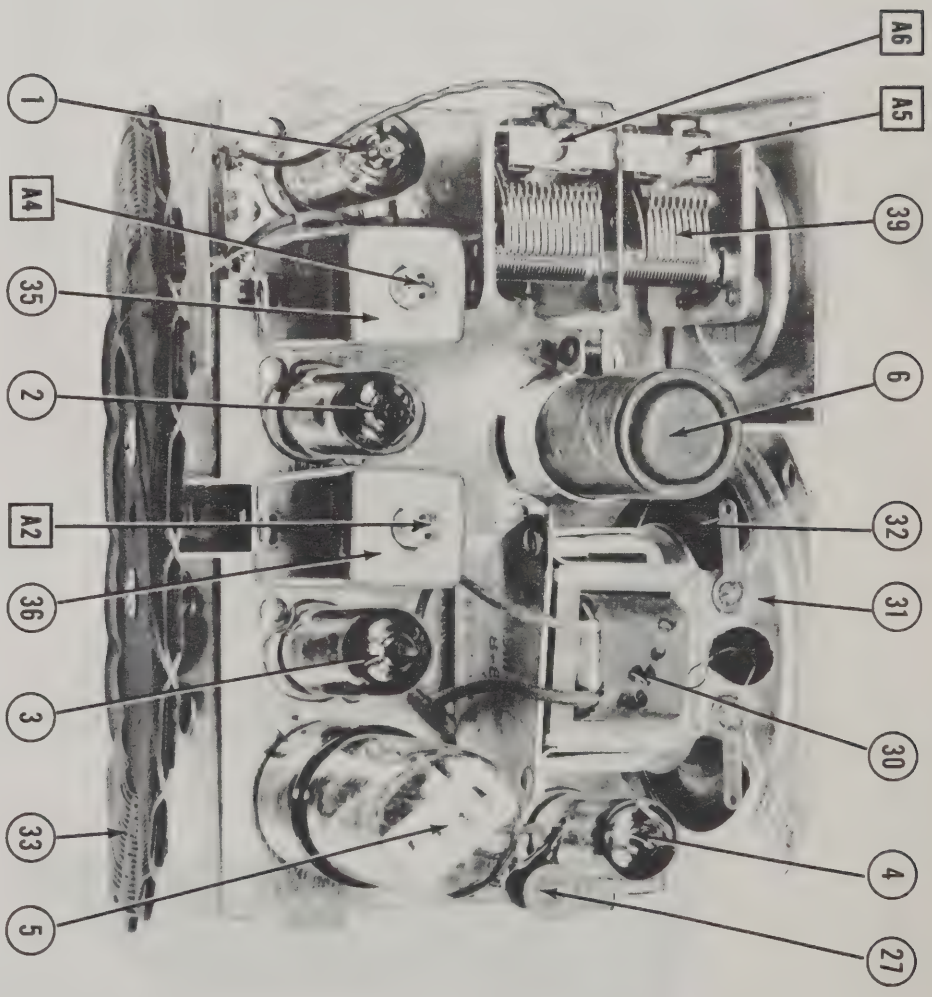
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	GEN. TELE. PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
18	2 Meg.	☆	20-7				Volume Control & Sw.

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	GEN. TELE. PART No.	IRC PART No.	
19	100KΩ	1/3		BTS-100K	Br.-Blk.-Yl. Oscillator Grid
20	30KΩ	1/3		BTS-33K	Or.-Blk.-Or. Converter Screen Dropping
21	4.7 Meg.	1/3		BTS-4.7 Meg.	Yl.-Vi.-Grn. AVC Network
22	10 Meg.	1/3		BTS-10 Meg.	Br.-Blk.-Blue AF Grid
23	4.7 Meg.	1/3		BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Screen Dropping
24	500KΩ	1/3		BTS-470K	Grn.-Blk.-Yl. AF Plate Load
25	1 Meg.	1/3		BTS-1 Meg.	Br.-Blk.-Grn. Output Grid
26	680Ω	1/3		BTS-680	Blue-Gray-Br. Filament String
27	2300Ω	10			" "
28	2000Ω	1		BTA-2200	Red-Blk.-Red Filter
29	10Ω	1/3		BW-☆-10	Br.-Blk.-Blk. Rectifier Ballast

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		GEN. TELE. PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
30	7300Ω	3.3Ω	520Ω	.5Ω	Part of 8-8			A-2998	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			GEN. TELE. PART No.	JENSEN PART No.		
	FIELD	VC IMP.				
31	PM	3.3Ω	8-8			
	CONE DIA.	VC DIA.				
32	3-3/8"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	GEN. TELE. PART No.	MEISSNER PART No.	
33	Loop Ant.		1.5Ω	13-1		
34	Osc. Coil	1Ω	6Ω	14-2	14-1040	Add 50MMFD from grid to high side tuning cap.
35	Input IF	10Ω	10Ω	15-3	16-6668	
36	Output IF	10Ω	10Ω	15-3	16-6669	

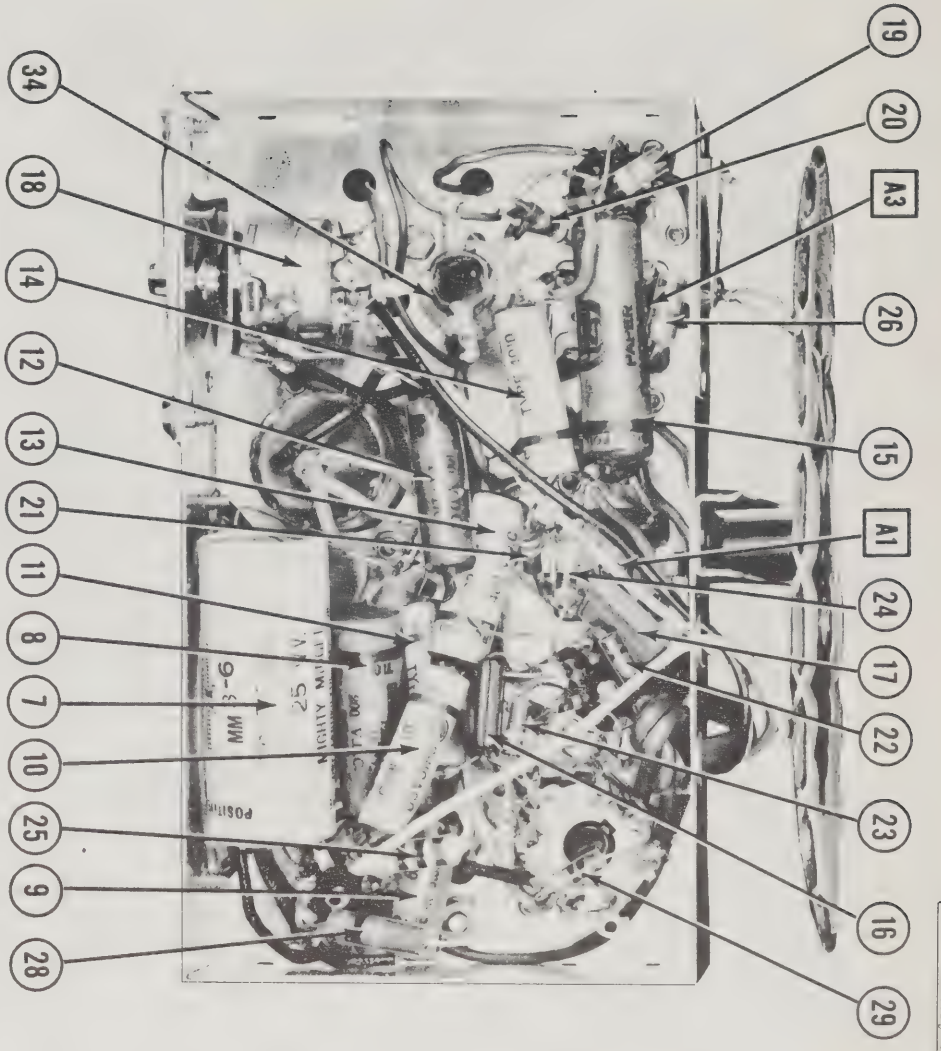
BATTERIES

ITEM No.	VOLTAGE	GEN. TELE. PART No.	EVEREADY			INSTALLATION NOTES
			"A"	"B"	"A-B"	
37	7½V "A"		#935			5 Used in series
38	90V "B"			#455		2 Used in series

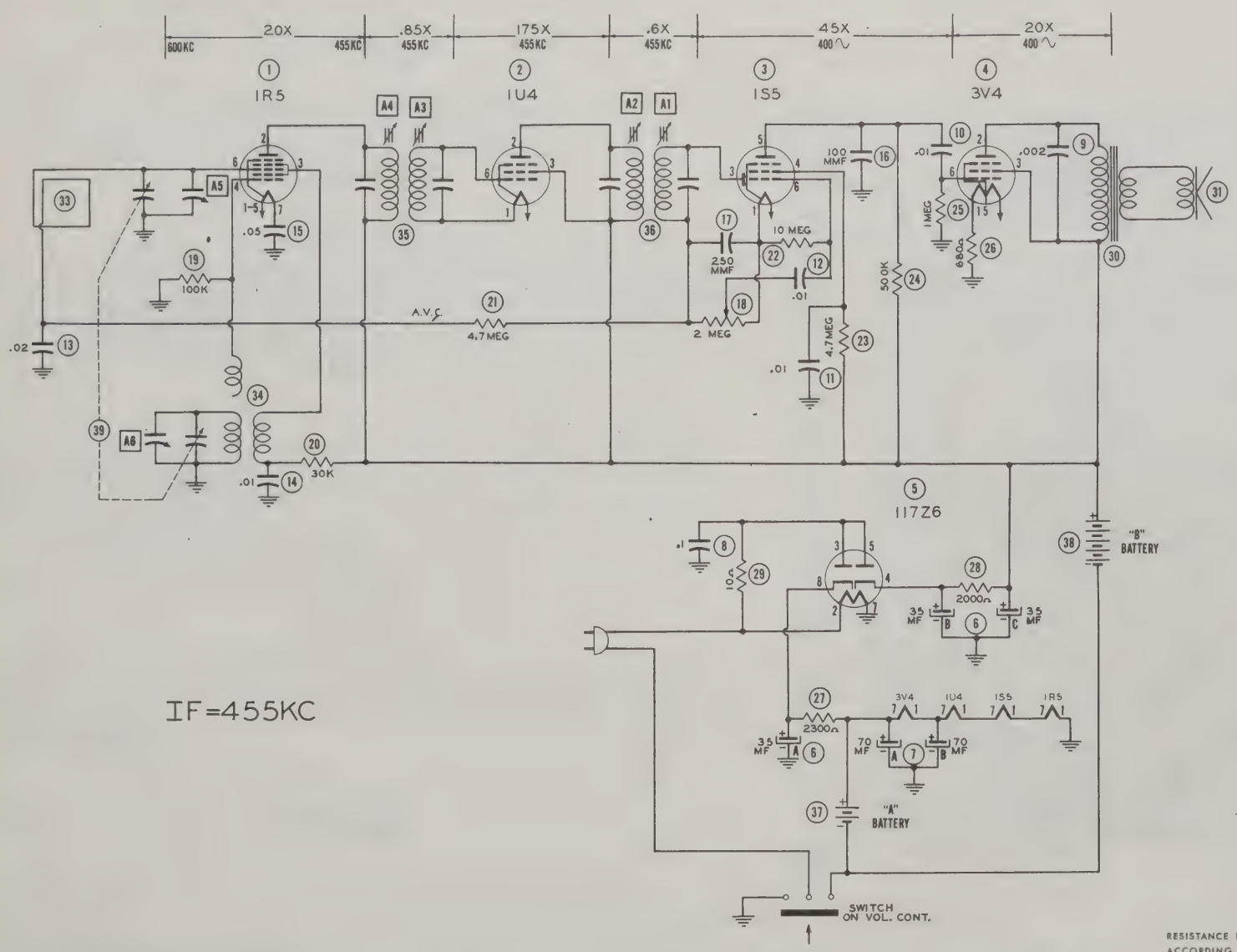
MISCELLANEOUS

ITEM No.	PART NAME	GEN. TELE. PART No.	NOTES
39	2 Gang Var.Cap.	6-3	(38-435, 30-197MMF)

CHASSIS—BOTTOM VIEW



General Television Model 26B5 Battery Operated



VOLTAGE AND RESISTANCE READINGS
TAKEN IN AC-DC POSITION.

Pin	1R5		1U4	
No.	Volt.	Res.	Volt.	Res.
1	0V.	0Ω	3.3VDC	*
2	95VDC	25KΩ	95VDC	25KΩ
3	45VDC	55KΩ	95VDC	25KΩ
4	-4.5VDC§	100KΩ	.1VDC	7 Meg.
5	0V.	0Ω	3.3VDC	*
6	.1VDC	7 Meg.	3.3VDC	*
7	1.6VDC	*	4.9VDC	*

§TAKEN WITH VACUUM TUBE VOLTMETER.

Pin	1S5		3V4	
No.	Volt.	Res.	Volt.	Res.
1	1.6VDC	*	4.9VDC	*
2	0V.	0Ω	93VDC	25KΩ
3	.2VDC	2 Meg.	95VDC	25KΩ
4	16VDC	4.7 Meg.	95VDC	25KΩ
5	31VDC	530KΩ	6.4VDC	*
6	.1VDC	10 Meg.	0V.	1 Meg.
7	3.3VDC	*	7.8VDC	*

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

Pin	117Z6GT	
No.	Volt.	Res.
1	0V.	0Ω
2	117VAC	250Ω
3	116VAC	260Ω
4	138VDC	25KΩ
5	116VAC	260Ω
6	95VDC	25KΩ
7	0V.	0Ω
8	123VDC	2.3KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

4719-11

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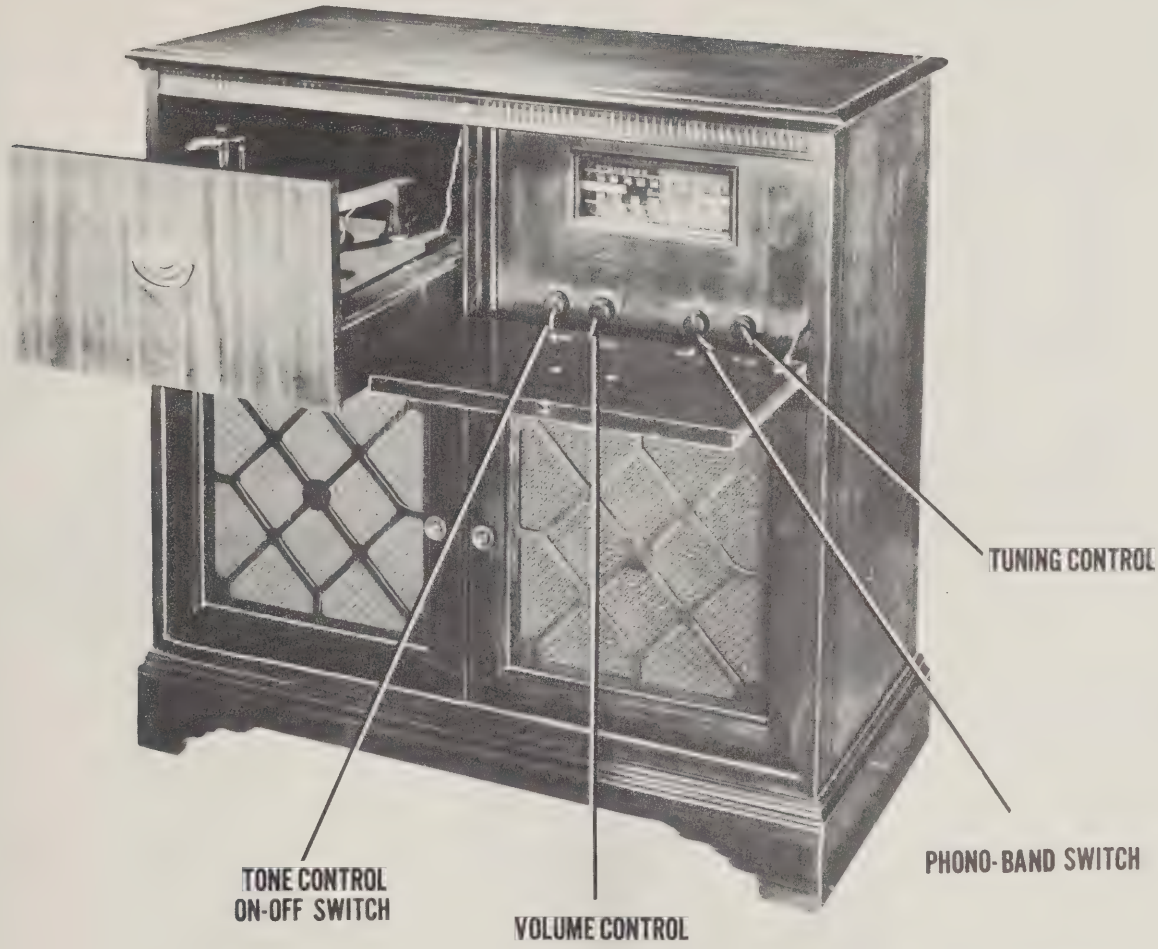
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative by shorting AVC to chassis.

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

KNIGHT MODEL
11C-300



KNIGHT MODEL
11C-300

KNIGHT MODEL 11C-300	
TRADE NAME	Knight, Model 11C-300
SUPPLIER	Allied Radio Corp., 833 W. Jackson Blvd., Chicago 7, Ill.
TYPE SET	AC Operated Combination Phono-Radio AM-FM Superheterodyne with Loop Ant.
TUBES (ELEVEN)	Types, 6BA6 FM RF Amp., 7Q7 AM Converter, 7F8 FM Converter, 7AH7 IF Amp., 7AG7 FM-2nd IF Amp., 7A6 Ratio Det., 7C6 AM Det.-AVC-AF, 7F7 Audio Phase Inv., (2) 7C5 Power Output, 5Y3GT Rectifier.
POWER SUPPLY	105-125 Volts AC
RATING	.750 Amp. @ 117 Volts AC
TUNING RANGE -	BROADCAST 540-1700KC FREQ. MOD. 88-108MC

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

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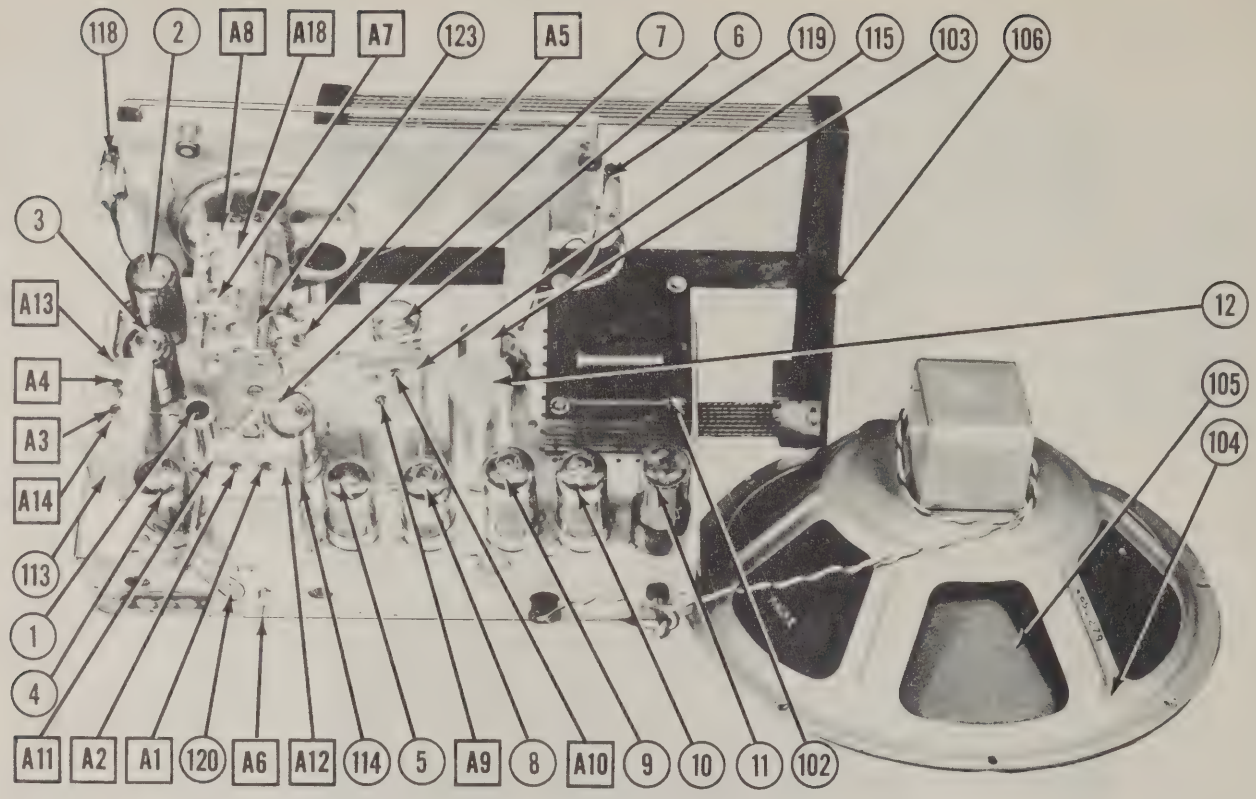
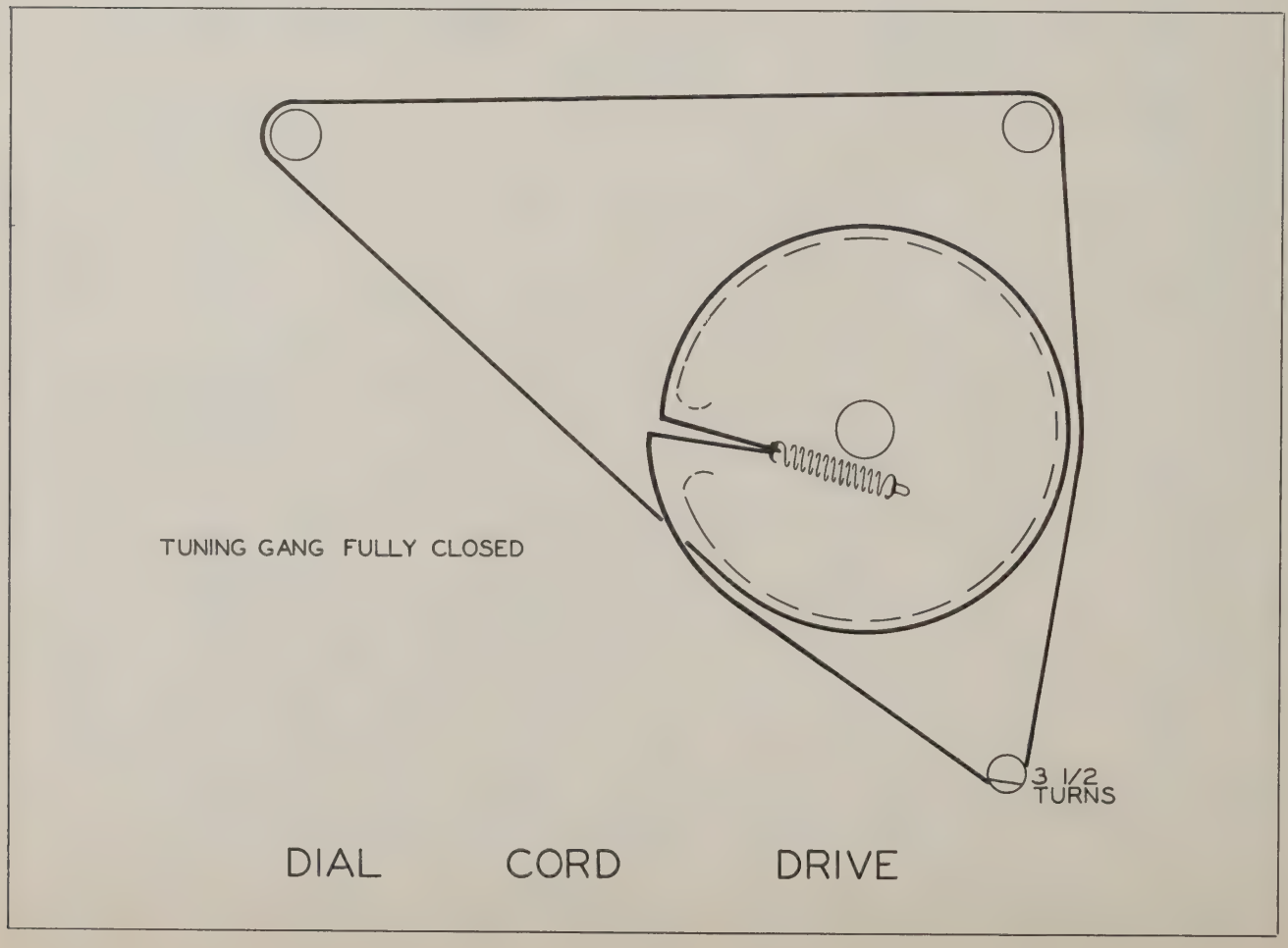
DATE 12/47 SET #29 FOLDER #4719-12

CHASSIS—TOP VIEW





KNIGHT MODEL
11C-300
PAGE 3

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: KNIGHT PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	FM RF Amp.	6BA6	6BA6	7BK	
2	AM Converter	7Q7	7Q7	8AL	
3	FM Converter	7F8	7F8	8BW	
4	IF Amp.	7AH7	7AH7	8V	
5	FM 2nd IF Amp.	7AG7	7AG7	8V	
6	Ratio Det.	7A6	7A6	7AJ	
7	AM Det.-AVC-AF	7C6	7C6	8W	
8	Audio Phase Inv.	7F7	7F7	8AC	
9	Power Output	7C5	7C5	6AA	
10	Power Output	7C5	7C5	6AA	
11	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: KNIGHT PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
12A	40	450		FP238	DY-2x40-450	EL-240	AF88J	UP-4445	◓ Filter
B	40	450							■ "
13	12	350		TC62	M-10-350	UT-123	PRS-350-12	BR1235	" Stabilizing Capacitor
14	4	250		TC40		UT-42	PRS-250-4	BR-425	Output Plate Bypass
15	.002	600		TP405	S-6-002	TC-22	684-002	DT6D2	" "
16	.002	600		TP405	S-6-002	TC-22	684-002	DT6D2	" " Audio Coupling
17	.05	400		TP426	S-4-05	TC-15	484-05	DT4S5	" "
18	.05	400		TP426	S-4-05	TC-15	484-05	DT4S5	" "
19	.01	400		TP421	S-4-01	TC-11	484-01	DT4S1	" "
20	.05	200		TP426	S-4-05	TC-15	484-05	DT4S5	" " Tone Compensation
21	.02	200		TP423	S-4-02	TC-12	484-02	DT4S2	Audio Coupling
22	.05	200		TP426	S-4-05	TC-15	484-05	DT4S5	RF Bypass Power Supply
23	.05	400		TP426	S-4-05	TC-15	484-05	DT4S5	Ratio Det. Bias Filter
24	.5	200		TP431	SDH-4-5	TC-5	434-.5	LT4P5	RF Bypass Power Supply
25	.02	400		TP423	S-4-02	TC-12	484-02	DT4S2	" " " "
26	.01	400		TP421	S-4-01	TC-11	484-01	DT4S1	" " " "
27	.01	150						Z41S1	2nd IF Cathode Bypass
28	.01	400		TP421	S-4-01	TC-11	484-01	DT4S1	1st IF Decoupling
29	.1	200		TP428	S-4-1	TC-1	484-.1	DT4P1	AVC Filter
30	.02	400		TP423	S-4-02	TC-12	484-02	DT4S2	AM Converter Screen Byp.
31	.05	400		TP426	S-4-05	TC-15	484-05	DT4S5	Line Filter
32	.05	400		TP426	S-4-05	TC-15	484-05	DT4S5	" "
33	250	500		MC240	MO.5-325	1FM-325	1468-00025	5W5T25	Tone Compensation
34	250	500		MC240	MO.5-325	1FM-325	1468-00025	5W5T25	" "
35	6800								" "
36	1500								De-emphasis Cer.-See Note
37	3000	300		MCb461	MW.5-23	1FM-23	1467-003	1W5D3	" Silver
38	250	500		MC240	MO.5-325	1FM-325	1468-00025	5W5T25	Diode Load Capacitor
39	1500								AVC Filter Cer.
40	100	500		MC235	MO.5-31	1FM-31	1468-0001	5W5T1	FM 1st IF Decoupling
41	1500								1st IF Cathode Byp. Cer.
42	100	500		MC235	MO.5-31	1FM-31	1468-0001	5W5T1	AVC Filter Silver
43	1500								FM Mixer Decoup. Cer.
44	1500								FM Osc. Decoup. Cer.
45	24	500		MCB220	MOS.5-425	MS-425	1469-000025	5R5Q25	FM Osc. Capacitor-Silver
46	1500								FM Mixer Cathode - Cer.
47	1500								RF Coupling - Cer.
48	45								RF Coupling Cer. ± 2%
49	1500								FM RF Cathode Byp. Cer.
50	1500								FM RF Screen Byp. Cer.
51	2000			MC457	MW.5-22	1FM-22	1467-002	1W5D2	RF Bypass Power Supply
52	2								Neutralizing Cap. Cer.
53	500	500		MC245	MO.5-35	1FM-35	1468-0005	5W5T5	AM Osc. Grid
54	500	500		MC245	MO.5-35	1FM-35	1468-0005	5W5T5	Filament Bypass
55	1500								" " Cer.
56	1500								" " "
57	1500								RF Bypass Power Supply Cer.
58	1500								AVC Filter Cer.
124	100	500		MC235	MO.5-31	1FM-31	1468-0001	5W5T1	Tone Compensation

Note-Not used in all models.

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: KNIGHT PART No.	REPLACEMENT DATA: JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.		5T-102†		†Replace output transformer to match 6-8Ω voice coil.
104	PM	3.6Ω		Mod. P12-S		
	CONE DIA.	VC DIA.				
105	11-7/8"	1"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: KNIGHT PART No.	REPLACEMENT DATA: MEISSNER PART No.	
106	Loop Ant.		.3Ω			
107	FM Ant.		.			
108	BC Ant. Coil		2Ω			
109	FM Ant.Coil	0Ω	0Ω			
110	FM RF Coil		0Ω			
111	BC Osc.Coil	.3Ω	5.5Ω		14-1040	Add 50MMFD from grid to high side tuning cap.
112	FM Osc.Coil	0Ω	0Ω			
113A	AM Input IF	22Ω	14Ω			
B	FM " "	.1Ω	.1Ω			
114A	AM OutputIF	14Ω				
B	FM " "	.1Ω	.1Ω			
115	Ratio Det.	1Ω	.3Ω			
116	RF Choke		.5Ω			
117	" "		0Ω			

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: KNIGHT PART No.		INSTALLATION NOTES
118-120	Bayonet	6-8	0.15	Brown			Type 47

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA: KNIGHT PART No.	REPLACEMENT DATA: ASTATIC PART No.	REMARKS
121		L-70	

MISCELLANEOUS

ITEM No.	PART NAME	KNIGHT PART No.	NOTES
122	Switch		Band-Phono
123	Tuning Cap.		AM (47-506 MMF, 47-506 MMF)

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	KNIGHT PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
59A	500K...	...		TM233	D18-133X	T-88	Volume Control
B	Shaft			Not Req.	A	Not Req.	Attach to 59A per instructions
60A	1 Meg.	½		M88	D18-137	R-8[illegible]	Tone Control
B	Shaft			Not Req.	A	Not Req.	Attach to 60A per instructions
C	Switch			M26	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	KNIGHT PART No.	IRC PART No.	
61	100Ω	1		BW-1-100	Br.-Blk.-Br. FM RF Cathode
62	22KΩ	1		BTA-22K	Red-Red-Or. FM RF Screen Dropping
63	470KΩ	¼		BTS-470K	Yl.-Vi.-Yl. FM Converter Grid
64	47Ω	¼		BW-½-47	Yl.-Vi.-Blk. FM Converter Cathode
65	470Ω	¼		BTS-470	Yl.-Vi.-Br. FM Converter Cathode
66	22KΩ	¼		BTS-22K	Red-Red-Or. FM Oscillator Grid
67	2200Ω	¼		BTS-2200	Red-Red-Red FM Oscillator Plate Decoupling
68	1000Ω	¼		BTS-1000	Br.-Blk.-Red Antenna Loading
69	470KΩ	¼		BTS-470K	Yl.-Vi.-Yl. AM Converter Grid
70	15KΩ	1		BTA-15K	Br.-Grn.-Or. AM Converter Screen Dropping
71	22KΩ	¼		BTS-22K	Red-Red-Or. AM Oscillator Grid
72	2.2 Meg.	¼		BTS-2.2 Meg.	Red-Red-Grn. AVC Network
73	110Ω	¼		BW-½-100	Br.-Br.-Br. 1st IF Cathode
74	470KΩ	¼		BTS-470K	Yl.-Vi.-Yl. Diode Load
75	100Ω	¼		BW-½-100	Br.-Blk.-Br, 2nd IF Cathode
76	10KΩ	¼		BTS-10K	Br.-Blk.-Or. Ratio Detector Load
77	10KΩ	¼		BTS-10K	Br.-Blk.-Or. " " "
78	220KΩ	¼		BTS-220K	Red-Red-Yl. AVC Network
79	10KΩ	¼		BTS-10K	Br.-Blk.-Or. Tone Compensation
80	3.3 Meg.	¼		BTS-3.3 Meg.	Or.-Or.-Grn. AF Grid
81	220KΩ	¼		BTS-220K	Red-Red-Yl. AF Plate Load
82	470KΩ	¼		BTS-470K	Yl.-Vi.-Yl. Tone Compensation
83	220KΩ	¼		BTS-220K	Red-Red-Yl. 2nd AF Grid
84	220KΩ	¼		BTS-220K	Red-Red-Yl. 2nd AF Plate Load
85	2200Ω	¼		BTS-2200	Red-Red-Red 2nd AF Cathode
86	10Ω	¼		BW-½-10	Br.-Blk.-Blk. Feedback
87	100Ω	¼		BW-½-100	Br.-Blk.-Br. "
88	100KΩ	¼		BTS-100K	Br.-Blk.-Yl. Phase Inverter Cathode
89	470KΩ	¼		BTS-470K	Yl.-Vi.-Yl. Phase Inverter Grid
90	100KΩ	¼		BTS-100K	Br.-Blk.-Yl. Phase Inverter Plate Load
91	2200Ω	¼		BTS-2200	Red-Red-Red Decoupling
92	220KΩ	¼		BTS-220K	Red-Red-Yl. Output Grid
93	220KΩ	¼		BTS-220K	Red-Red-Yl. Output Grid
94	220Ω	2		BW-2-220	Red-Red-Br. Output Cathode - See Note 1
95	2200Ω	10		AB-2000	Filter
96	470KΩ	¼		BTS-470K	Yl.-Vi.-Yl. Ratio Detector Bias
97	22KΩ	¼		BTS-22K	Red-Red-Or. Tone Compensation
98	100KΩ	¼		BTS-100K	Br.-Blk.-Yl. Series Test Jack
99	2.2 Meg.	¼		BTS-2.2 Meg.	Red-Red-Grn. Series Phono
100	100KΩ	¼		BTS-100K	Br.-Blk.-Yl. Phono Shunt
101	10Ω	¼		BW-½-10	Br.-Blk.-Blk. Feedback - See Note 2

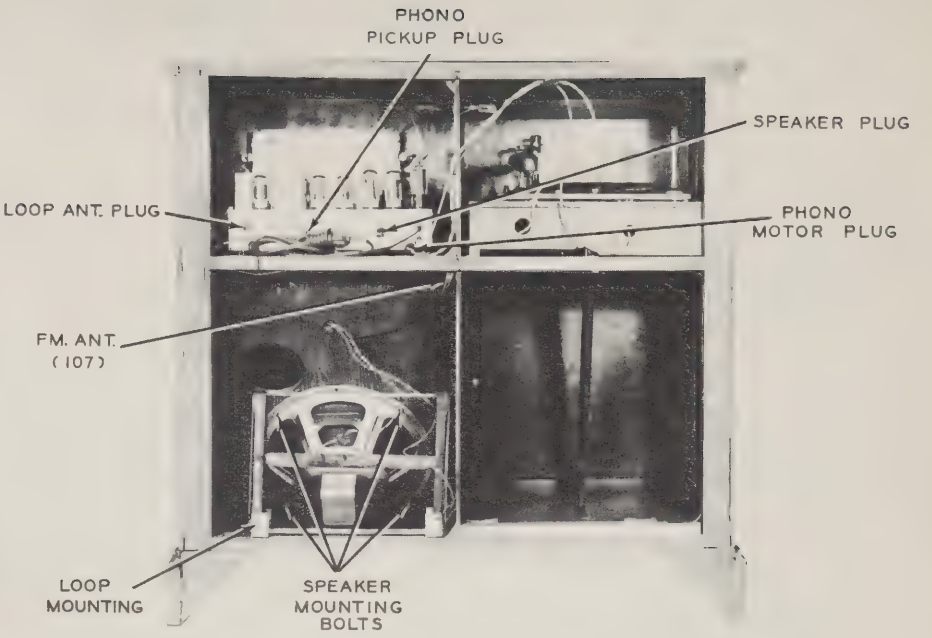
Note 1 - Some models use two 470Ω resistors in parallel.
Note 2 - Not used in all models.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	KNIGHT PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
102	117V AC @ .75A	625V CT @ .11ÖA	5.0V AC @ 2.0A	6.3V AC @ 3.5A		P-6013	T22R05	P-2953

TRANSFORMER (OUTPUT)

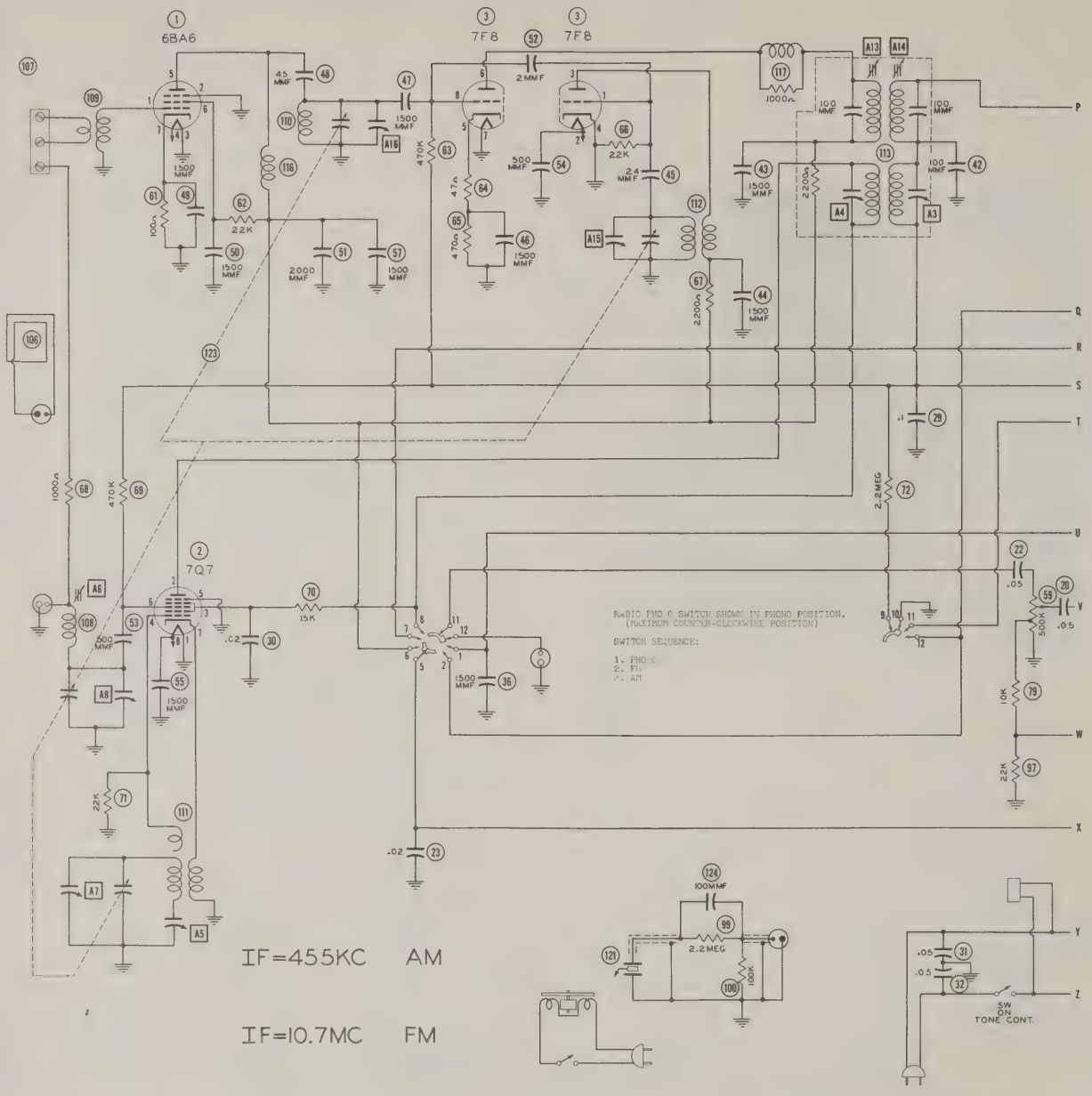
ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		KNIGHT PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
103	4000 Ω CT	5.6	540Ω CT	.4Ω		A-3843	T22S60*	A-2901	*Drill one new mounting hole.



DISASSEMBLY INSTRUCTIONS

1. Remove four control knobs.
2. Remove phono pickup plug from chassis.
3. Disconnect phono motor plug.
4. Remove speaker plug from chassis.
5. Remove loop antenna plug from chassis.
6. Remove FM dipole leads from chassis.
7. Remove two wood screws holding loop antenna in cabinet. Remove loop from cabinet.
8. Remove four hex nuts holding speaker in cabinet. Remove speaker from cabinet.
9. Remove one wood screw holding cabinet light.
10. Remove four screws holding chassis in cabinet. Remove chassis from cabinet.

DWG. L-47 REV #C FOLDER #4719-12



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
‡ 1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	127VDC	1.6VDC	–
2	[illegible]	[illegible]	[illegible]	71.7VDC	-14.[illegible]	[illegible]	-.2VDC	0V.	6.3VAC
‡ 3	[illegible]	[illegible]	0V.	188VDC	0V.	2.8VDC	210VDC	[illegible]	[illegible]
4	7AH7	V.	235VDC	235VDC	0V.	0V.	-.1VDC	1VDC	6.3VAC
‡ 5	[illegible]	[illegible]	270VDC	270VDC	0V.	0V.	0V.	1.2VDC	6.3VAC
‡ 6	7A6	0V.	2.6VDC	0V.	-.3VDC	0V.	1.8VDC	0V.	6.3VAC
7	7C6	V.	150VDC	-.7VDC	0V.	-.1VDC	-.3VDC	0V.	6.3VAC
8	7F7	V.	115VDC	170VDC	115VDC	0V.	115VDC	1.5VDC	6.3VAC
9	7C5	V.	310VDC	250VDC	0V.	0V.	0V.	16VDC	6.3VAC
10	[illegible]	0V.	310VDC	250VDC	0V.	0V.	0V.	16VDC	6.3VAC
11	5Y3GT	AC.	310VDC	0V.	310VAC	0V.	310VAC	0V.	310VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
‡ 1	6BA6	0Ω	0Ω	0Ω	.1Ω	40KΩ	[illegible]	[illegible]	–
2	7Q7	0Ω	40KΩ	50KΩ	22KΩ	0Ω	[illegible]	[illegible]	[illegible]
‡ 3	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4	7AH7	0Ω	40KΩ	40KΩ	0Ω	0Ω	[illegible]	[illegible]	[illegible]
‡ 5	7AG7	0Ω	40KΩ	40KΩ	0Ω	0Ω	[illegible]	[illegible]	[illegible]
‡ 6	7A6	0Ω	480KΩ	INF.	630KΩ	0Ω	[illegible]	INF.	[illegible]
7	7C6	0Ω	260KΩ	3 Meg.	0Ω	460KΩ	800KΩ	[illegible]	[illegible]
8	7F7	0Ω	110KΩ	140KΩ	260KΩ	250KΩ	260KΩ	[illegible]	[illegible]
9	7C5	0Ω	40KΩ	40KΩ	INF.	INF.	210KΩ	250Ω	[illegible]
10	7C5	0Ω	40KΩ	40KΩ	INF.	INF.	230KΩ	250Ω	[illegible]
11	5Y3GT	INF.	40KΩ	INF.	150Ω	INF.	160Ω	INF.	[illegible]

§TAKEN WITH VACUUM TUBE VOLTMETER.

‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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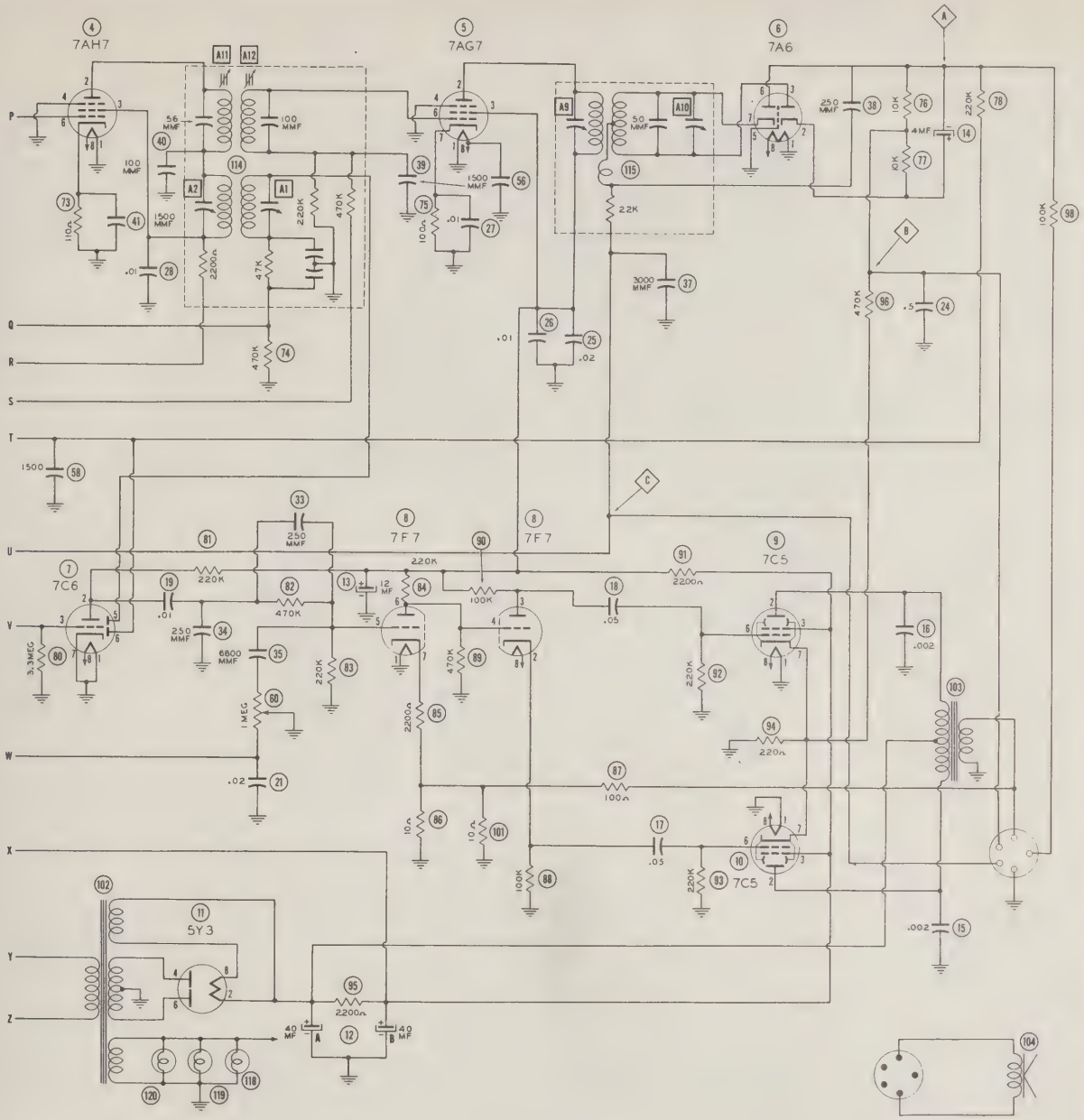
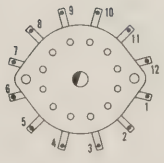
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

4719-12

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.





STAGE GAIN MEASUREMENTS			
CONV. GAIN	40X	IN	[illegible] KC
		OUT	[illegible] KC
1st IF TRANS.	[illegible]X		[illegible] KC
IF TUBE	[illegible]X		[illegible] KC
2nd IF TRANS.	[illegible]X		[illegible] KC
1st AUDIO	[illegible]X		[illegible] ~
2nd AUDIO	[illegible]X		[illegible] ~
OUTPUT	[illegible]X		[illegible] ~

OTOFACT STANDARD NOTATION SCHEMATIC
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4719-12

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to last reference line on broadcast band at low freq. end of dial.

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.01 MFD	High side to front stator of tuning cap. Low side to chassis.	455KC	AM (fully clock-wise)	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output
2	200MMFD	High side to "BC" term. on ant. term. board. Low side to chassis.	600KC	"	600KC	"	A5,A6	" " " "
3	200MMFD	"	1600KC	"	1600KC	"	A7,A8	Adjust for maximum output. Repeat Steps 2 & 3 until no further improvement can be made.

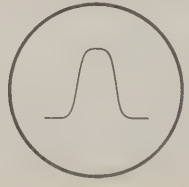
FM ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4	.01 MFD	High side to Pin 6 (grid) 7AG7. Low side to chassis.	10.7MC (unmodu-lated)	FM (center position)	Tuning cap. fully open.	DC probe to Point A. Common lead to Point B.	A9	Adjust for maximum de-flection.
5	.01 MFD	"	"	"	"	DC probe to Point C, Common lead to Point B.	A10	Adjust for zero deflec-tion.
6	.01 MFD	High side to Pin 6 (grid) 7AH7. Low side to chassis.	"	"	"	DC probe to Point A. Common lead to Point B.	A11, A12.	Preset A12 by turning it maximum number of turns possible counter-clock-wise. Adjust A11 for maxi-mum deflection. Then ad-just A12 for maximum de-flection. Attenuate out-put of sig. gen. to main-tain a meter reading of 2 to 3 volts.
7	.01 MFD	High side to Pin 8 (grid) 7F8. Low side to chassis.	"	"	"	"	A13, A14	Preset A14 by turning it maximum number of turns possible counterclockwise. Adjust A13 for maximum deflection then adjust A14 for maximum deflec-tion. Attenuate output of sig. gen. to maintain meter reading of 2 to 3 volts. Do not readjust any of the IF adjustments.
8	2 150Ω carbon res.	High side to "A1" low side to "A2" terminals of ext. ant. term. board with 150Ω in series with each lead.	106MC	"	106MC	"	A15, A16	Adjust for maximum de-flection.

FM ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Modulate signal with 60∿, 450KC sweep. Use 120∿ sawtooth sweep for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4	.01 MFD	High side to Pin 6 (grid) 7AG7. Low side to chassis.	10.7MC (Freq. modulated)	FM (center position)	Tuning cap. fully open.	Vertical input to Point A. Ground to chassis.	A9	Disconnect 4 MFD cap. from point A. Adjust for maximum amplitude, sym-metry and coincidence per pattern A.
5	.01 MFD	High side to Pin 6 (grid) 7AH7. Low side to chassis.	"	"	"	"	A11,A12	Adjust for maximum ampli-tude, symmetry and coin-cidence per Pattern A.
6	.01 MFD	High side to Pin 8 (grid) 7F8. Low side to chassis.	"	"	"	"	A13,A14	Adjust for maximum ampli-tude. Reconnect 4 MFD. capacitor to Point A.
7	.01 MFD	High side to Pin 6 (grid) 7AG7. Low side to chassis.	"	"	"	Vertical input to Point C. Ground to chassis.	A10	Adjust for maximum ampli-tude and straightness of crossover lines with crossover at center of pattern per Pattern B.
8	2 150Ω carbon res.	High side to "A1" low side to "A2" terminals of ext. ant. term. board with 150Ω in series with each lead.	106MC	"	106MC	Vertical input to Point A. Ground to chassis.	A15	Disconnect 4 MFD cap. from Point A. Adjust for coincidence.
9	"	"	"	"	Tune for co-incidence.	"	A16	Adjust for maximum ampli-tude. Reconnect 4 MFD cap.



PATTERN A

PATTERN B

MAJESTIC MODEL
7YR752 (Ch. 7B04A)

MAJESTIC MODEL
7YR752 (Ch. 7B04A)

MAJESTIC MODEL 7YR752

TRADE NAME	Majestic, Model 7YR752 (Ch. 7B04A)
MANUFACTURER	Majestic Radio & Tel. Corp., Elgin, Ill.
TYPE SET	AC Operated Phono-Radio Combination Superheterodyne with Wire Recorder
TUBES (SEVEN)	Types, 12SA7 Converter, 12SK7GT IF Amp., 12SQ7 Det.-AVC-AF, 50L6GT Power Output, 12BA6 AF Amp., 50B5 Bias Osc., 35Z5GT Rectifier.
POWER SUPPLY	110-120 Volts AC
TUNING RANGE—BROADCAST	540-1650KC RATING .380 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low freq. end of dial. Use isolation transformer if available. If not, connect a .1 MFD capacitor in series with low side of signal generator and B-. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	SELECT SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.05 MFD.	High side to Pin 8 (grid) 12SA7. Low side to B-.	455KC	Radio	600KC	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD. to reduce hum modulation.
2		Loop	1500KC	"	1500KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. The trimmer opposite A5 is a factory adjustment and ordinarily need not be adjusted.
3		"	"	"	Tune for maximum output.	"	A6	Adjust for maximum output.

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DATE 12/47 SET #29 FOLDER #4719-13

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MAJESTIC PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12SA7	12SA7	8R	
2	IF Amp.	12SK7GT	12SK7GT	8N	
3	Det.-AVC-AF	12SQ7	12SQ7	8Q	
4	Power Output	50L6GT	50L6GT	7AC	
5	AF Amp.	12BA6	12BA6	7BK	
6	Bias Osc.	50B5	50B5	7BZ	
7	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MAJESTIC PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
8A	40	150	19-24	2N514	DSB-2x40-150	TA-240	PRSA-150-20-40	BRL4215	Filter - Red
B	20	150							" - Blue
9	20	150	19-32	TC45	M-20-150	UT-201	PRS-150-20	BR2015	"
10	100	10	19-36		M-100-12	UHC-112		BRH121	Output Cathode Bypass
11A	40	150	19-25	FP306*	DY-4020-150	EL-24	AF444D†	UP4215	■ Filter
B	20	150							▲ "
12	100	10	19-36		M-100-12	UHC-112		BRH121	AF Cathode Bypass
13	.04	400	5-58	TP425	S-6-04	TC-14	464-04	DT4S4	Output Cathode Bypass
14	.01	200	015-5	TP421	S-4-01	TC-11	484-01	DT4S1	Audio Coupling
15	.002	600	017-2	TP405	S-6-002	TC-22	684-002	DT6D2	" "
16	.05	200	015-8	TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter
17	.01	200	015-5	TP421	S-4-01	TC-11	484-01	DT4S1	Conv. Screen Bypass
18	.05	200	015-8	TP426	S-4-05	TC-15	484-05	DT4S5	IF Cathode
19	.05	200	015-8	TP426	S-4-05	TC-15	484-05	DT4S5	Line Isolation
20	.01	200	015-5	TP421	S-4-01	TC-11	484-01	DT4S1	Ext. Ant. Isolation
21	.05	200	015-8	TP426	S-4-05	TC-15	484-05	DT4S5	RF Bypass
22	.05	200	015-8	TP426	MPH-6-05	TC-15	484-05	DT4S5	Line Filter
23	.1	200	015-9	TP428	S-4-1	TC-1	484-.1	DT4P1	AF Screen Bypass
24	.01	400	016-5	TP421	S-4-01	TC-11	484-01	DT4S1	Audio Coupling
25	.05	200	015-8	TP426	S-4-02	TC-15	484-05	DT4S5	Phono Isolation
26	.2	200	5-51	TP429	S-4-2	TC-2	484-.2	DT4P2	Bias Osc. Screen Bypass
27	.005	600	017-4	TP408	S-6-005	TC-25	684-005	DT6D5	Indicator Coupling
28	.05	400	016-8	TP426	S-4-05	TC-15	484-05	DT4S5	Audio Coupling
29	.001	600	017-1	TP404	S-6-001	TC-21	684-001	DT6D1	" "
30	220	500	020-53	MC237	MO.5-32	1FM-32	1468-0002	5W5T2	AF Plate Bypass
31	220	500	020-53	MC237	MO.5-32	1FM-32	1468-0002	5W5T2	Diode RF Filter
32	700	500	6-228		MO.3-37	1FM-37		1W5T7	Vol. Cont. RF Bypass
33	1000	300	6-230	MC255	MO.3-21	1FM-21	1468-001	1W5D1	Phono Shunt Cer.
34	1500	500	021-24	MC256	MW.5-215	1FM-215	1467-0015	1W5D15	Bias Osc. Feedback
35	5600	500	021-56						Fixed Tuning Capacitor

*Do not use bypass section. †Parallel sections to obtain desired capacity.

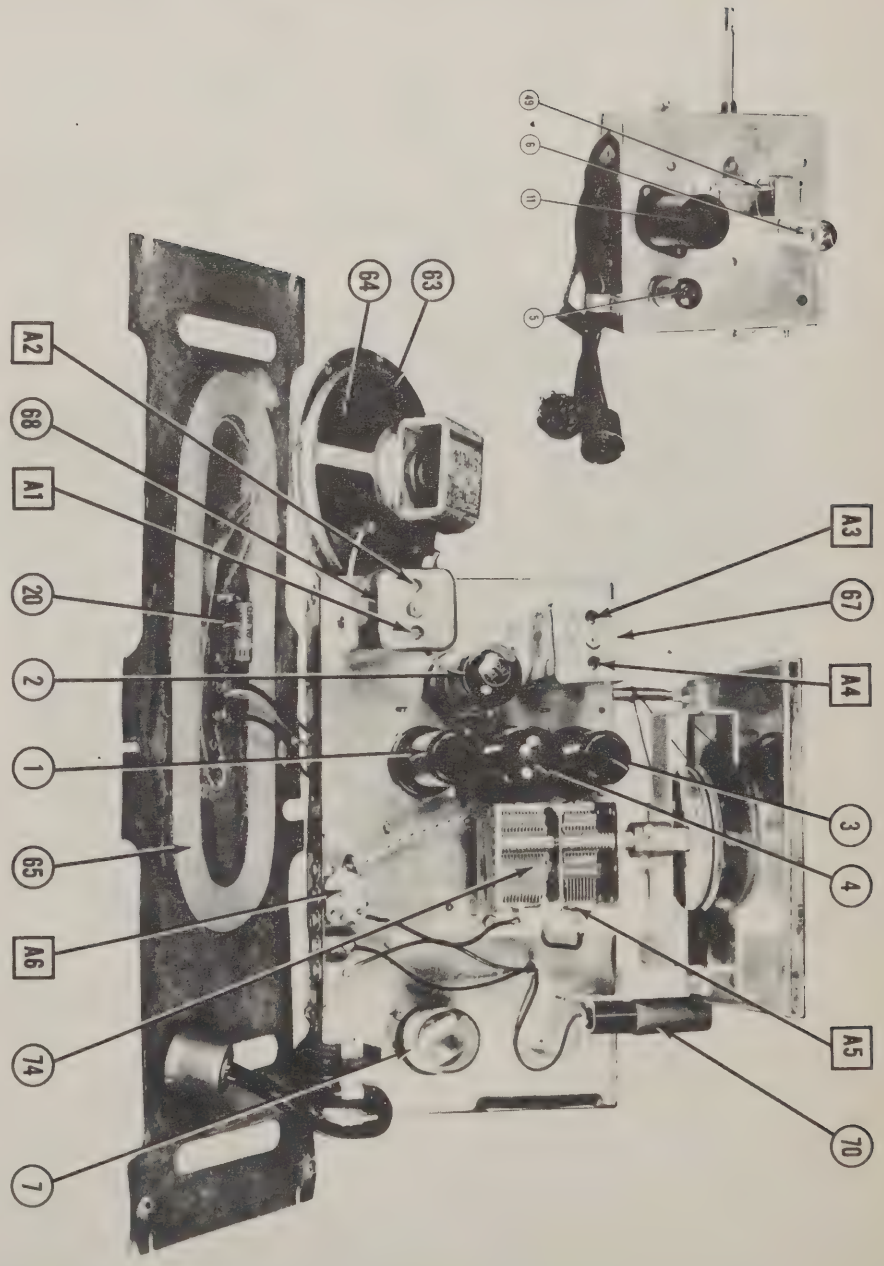
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MAJESTIC PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
36A	500KΩ	½	13-14	MK401	D13-133	AM-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 36A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MAJESTIC PART No.	IRC PART No.	IDENTIFICATION CODES
37	22KΩ	¼	02-143	BTS-22K	Red-Red-Or. Oscillator Grid
38	2200Ω	¼	02-100	BTS-2200	Red-Red-Red Screen Dropping
39	220KΩ	¼	02-185	BTS-220K	Red-Red-Yl. Line Isolation
40	3.3 Meg.	¼	02-234	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
41	22KΩ	¼	02-143	BTS-22K	Red-Red-Yl. Diode Filter
42	10 Meg.	¼	02-255	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
43	330KΩ	¼	02-192	BTS-330K	Or.-Or.-Yl. AF Plate Load
44	470KΩ	¼	02-199	BTS-470K	Yl.-Vi.-Yl. Output Grid

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	MAJESTIC PART No.	IRC PART No.	
45	150Ω	1	03-151	BW-1-150	Br.-Grn.-Br. Output Cathode
46	1200Ω	1	03-120	BTA-1200	Br.-Red-Red-Filter
47	22Ω	½	02-17	BW-½-22	Red-Red-Blk. Surge Limiter
48	220Ω	2	04-159	BW-2-220	Red-Red-Br. Filter
49	375Ω		9-335	DHA-400	Line Dropping - See Note 3
50	680KΩ	½	02-206	BTS-680K	Blue-Gray-Yl. Voltage Divider
51	470KΩ	½	02-199	BTS-470K	Yl.-Vi.-Yl. "
52	150Ω	1	03-52	BW-1-150	Br.-Grn.-Br. Decoupling
53	22KΩ	½		BTS-22K	Red-Red-Or. Pre-Amp. Decoupling - See Note 1
54	2.2 Meg.	½	02-227	BTS-2.2 Meg.	Red-Red-Grn. Pre-Amp. Screen Dropping
55	470KΩ	½	02-199	BTS-470K	Yl.-Vi.-Yl. Pre-Amp. Plate Load
56	2200Ω	½	02-100	BTS-2200	Red-Red-Red Pre-Amp. Cathode
57	470KΩ	½	02-199	BTS-470K	Yl.-Vi.-Yl. Pre-Amp. Grid
58	82KΩ	½	02-167	BTS-82K	Gray-Red-Or. Tone Compensation
59	3Ω	1	9-336	BW-1-3.3	Or.-Blk.-Gold Output Transformer Loading
60	270Ω	½		BW-½-270	Red-Vi.-Br. Parasitic Suppressor - See Note 2
61	22KΩ	½	02-143	BTS-22K	Red-Red-Or. Bias Oscillator Grid

Note 1 - Some models use 120KΩ in this application. IRC replacement BTS-120K.
Note 2 - Some models use 330Ω in this application. IRC replacement BW-½-330.
Note 3 - On IRC replacement set slider at 375Ω from one end.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MAJESTIC PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
62	2470Ω	3.3Ω	174Ω tapped @ 9Ω	.9Ω	12-20	A-3876#		A-2928#	#Add extra filter to reduce hum level.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	FIELD	VC IMP.	MAJESTIC PART No.	JENSEN PART No.		
63	PM	3.3Ω	22-32	ST-105 Mod. P5-X		
	CONE DIA.	VC DIA.				
64	4"	½"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

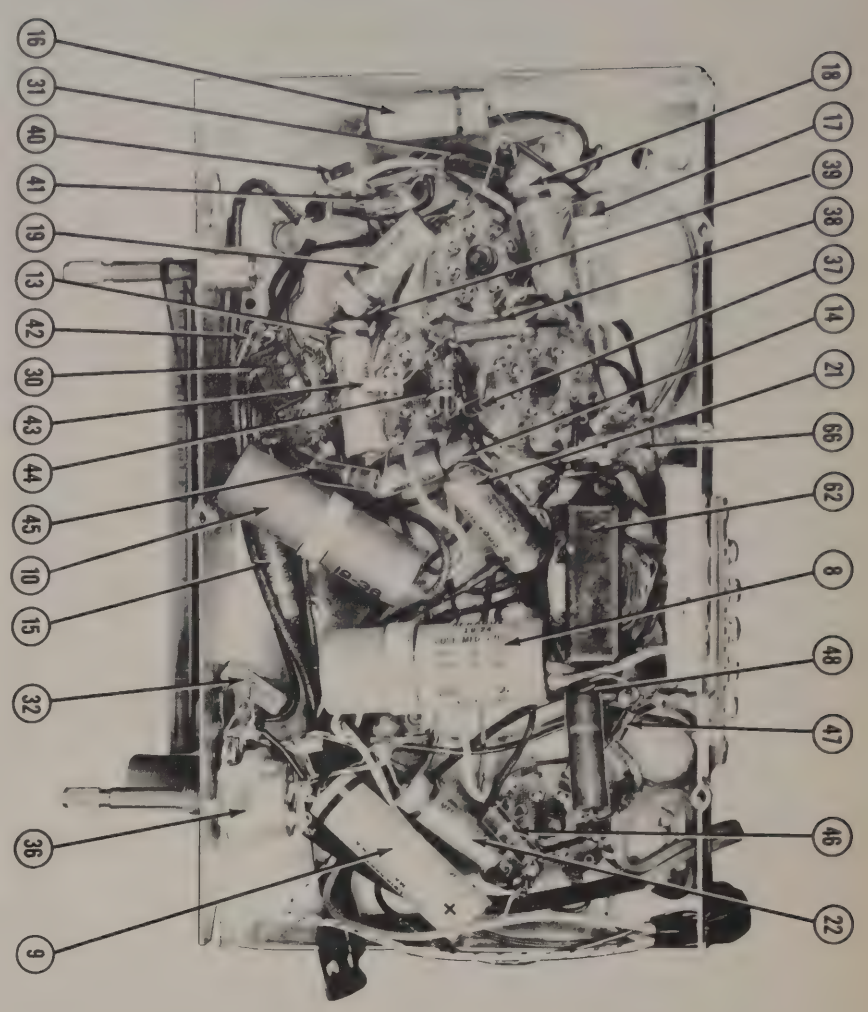
R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	MAJESTIC PART No.	MEISSNER PART No.	
65	Loop Ant.	.2Ω	1.7Ω	20-30		
66	Osc. Coil		5.5Ω	3-158	14-1040	Add 50 MMFD from grid to high side tuning cap.
67	Input IF	12Ω	12Ω	3-116	16-6658	
68	Output IF	12Ω	12Ω	3-117	16-6660	
69	Bias Osc. Coil	.1Ω	6Ω	S-1572		

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					MAJESTIC PART No.		
70	Bayonet	6-8	0.15	Brown	26-2		Type 47

CHASSIS—BOTTOM VIEW



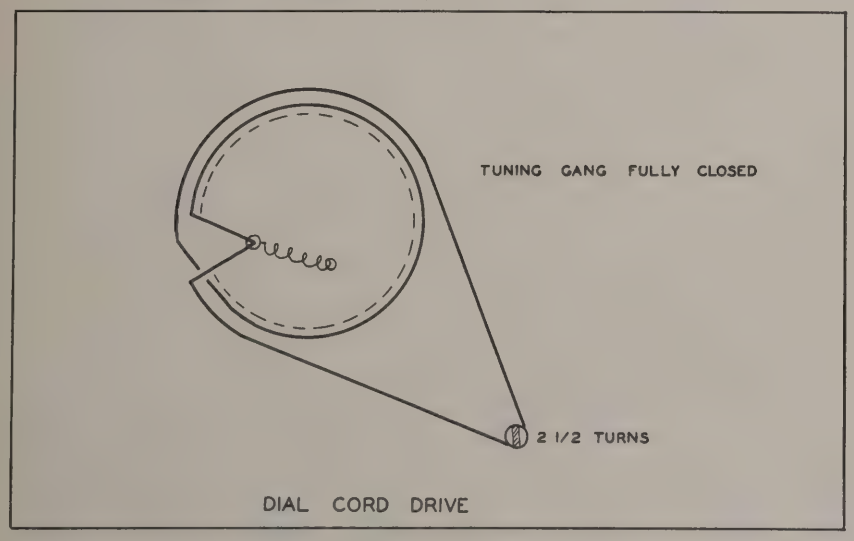
PARTS LIST AND DESCRIPTIONS (Continued)

PHONO CARTRIDGE

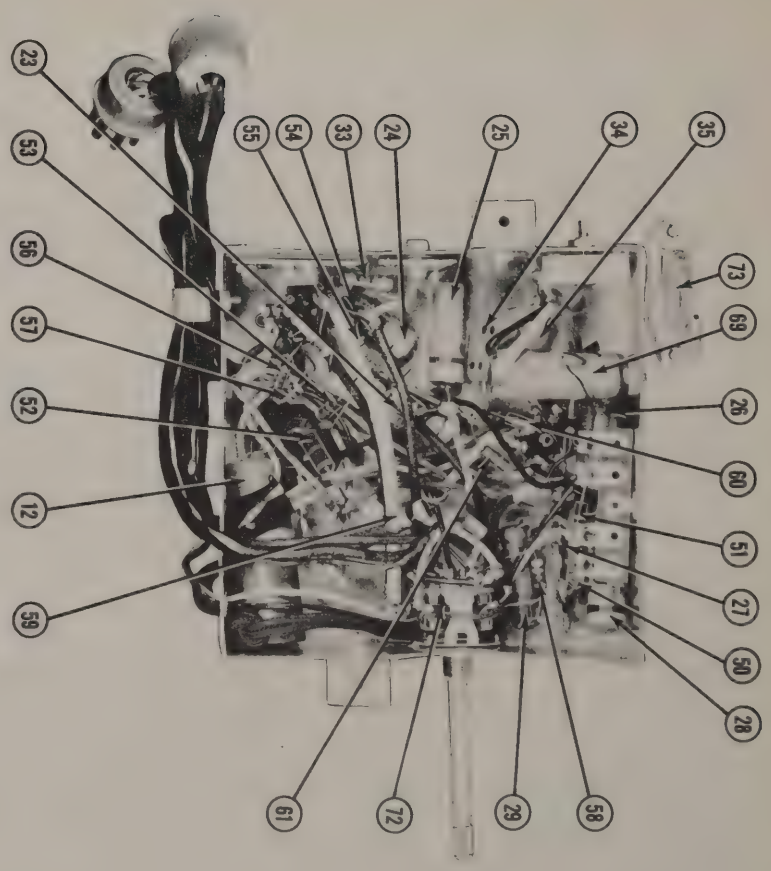
ITEM No.	REPLACEMENT DATA		REMARKS
	MAJESTIC PART No.	ASTATIC PART No.	
71	140-65	L-71-A	

MISCELLANEOUS

ITEM No.	PART NAME	MAJESTIC PART No.	NOTES
72	Switch	11-75	Selector
73	Indicator	26-19	Neon
74	2 Gang Var. Cap	7-24	(16-447 MMF, 32-197MMF) 7-21 Alternate
	Trimmer	8-33	Bias Osc. Adj.
	Dial Scale	117-66	
	Pointer	135-14	



DIAL CORD DRIVE



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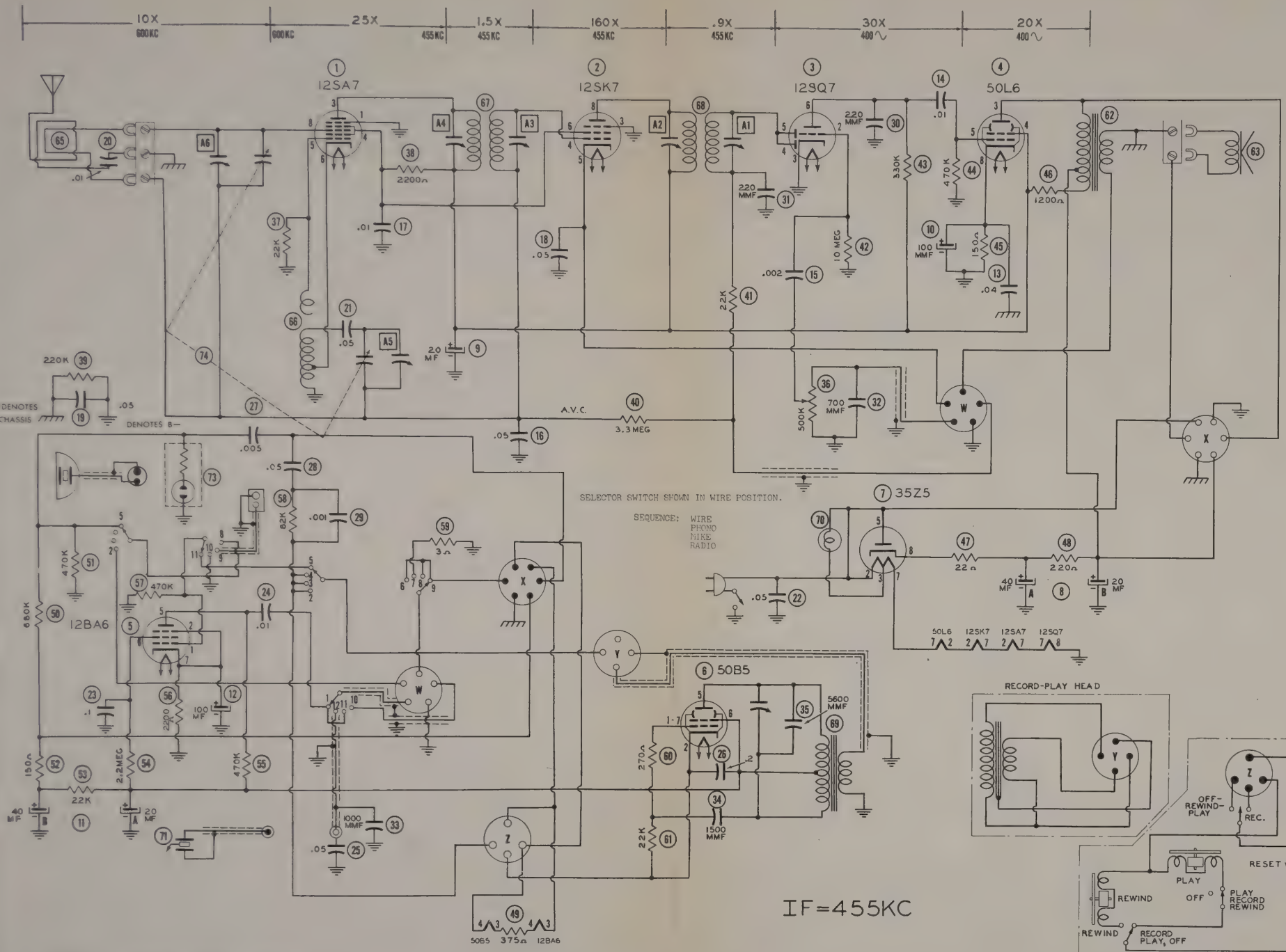

VOLTAGE AND RESISTANCE READINGS
TAKEN IN PLAY RADIO POSITION.

Pin No.	12SA7 Volt.	12SA7 Res.	12SK7GT Volt.	12SK7GT Res.
1	0V.	250KΩ	0V.	250KΩ
2	24VAC	24Ω	36VAC	36Ω
3	88VDC	100KΩ	0V.	0Ω
4	67VDC	100KΩ	-.8VDC	4 Meg.
‡ 5	-7.8VDC§	22KΩ	0V.	0Ω
‡ 6	0V.	.8Ω	67VDC	100KΩ
7	12VAC	12Ω	24VAC	24Ω
8	-.8VDC	4 Meg.	88VDC	100KΩ

§TAKEN WITH VACUUM TUBE VOLTMETER.

Pin No.	12SQ7 Volt.	12SQ7 Res.	50L6GT Volt.	50L6GT Res.
1	0V.	250KΩ	0V.	250KΩ
2	.4VDC	10 Meg.	36VAC	36Ω
3	0V.	0Ω	105VDC	100KΩ
4	-.4VDC	500KΩ	88VDC	100KΩ
‡ 5	-.4VDC	500KΩ	0V.	450KΩ
‡ 6	55VDC	430KΩ	0V.	0Ω
7	12VAC	12Ω	87VAC	73Ω
8	0V.	0Ω	6.8VDC	150Ω

‡READINGS ON TUBES #5 AND 6 TAKEN IN WIRE RECORD POSITION WITH PIN 2 OF 50B5 CONNECTED TO B-.

Pin No.	12BA6 Volt.	12BA6 Res.	50B5 Volt.	50B5 Res.
1	0V.	440KΩ	-26VDC	22KΩ
2	.3VDC	2.2KΩ	0V.	0Ω
3	0V.	0Ω	67VAC	115Ω
4	11VAC	10Ω	117VAC	90Ω
‡ 5	30VDC	700KΩ	90VDC	100KΩ
‡ 6	6VDC	2.5 Meg.	90VDC	100KΩ
7	.3VDC	2.2KΩ	-26VDC	22KΩ

Pin No.	35Z5GT Volt.	35Z5GT Res.
1	112VDC	100KΩ
2	117VAC	90Ω
3	114VAC	87Ω
4	88VDC	100KΩ
‡ 5	117VAC	90Ω
‡ 6	112VDC	100KΩ
7	87VAC	73Ω
8	125VDC	100KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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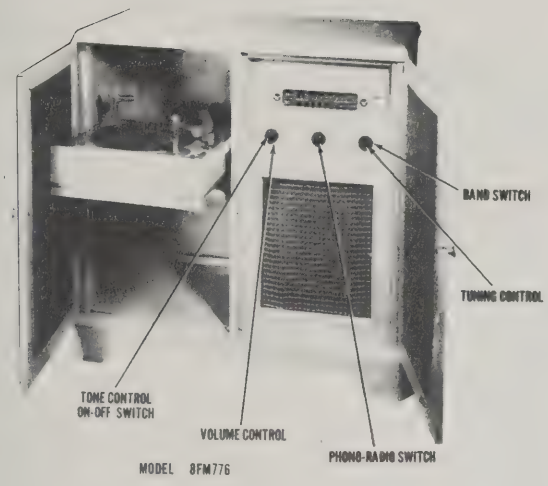
4719-13

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

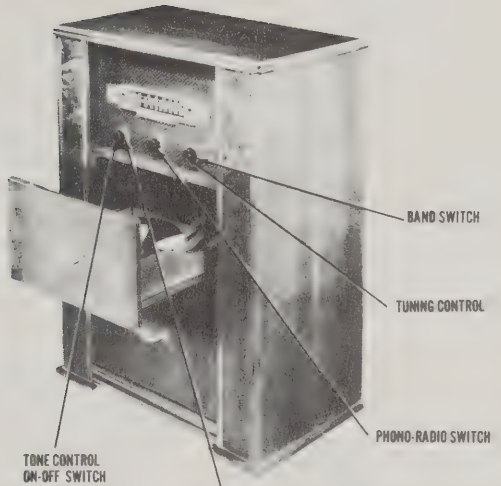
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

MAJESTIC MODELS 8FM775 (Ch. 8BO8D), 8FM776 (Ch. 8BO7D)

MAJESTIC MODELS 8FM775 (Ch. 8BO8D), 8FM776 (Ch. 8BO7D)



MODEL 8FM776



MODEL 8FM775

MAJESTIC MODELS 8FM775 (Ch. 8BO8D), 8FM776 (Ch. 8BO7D) PAGE 1

TRADE NAME	Majestic, Models 8FM775 (Ch. 8BO8D), 8FM776 (Ch. 8BO7D)
MANUFACTURER	Majestic Radio & Tel. Corp., Elgin, Ill.
TYPE SET	AC Operated FM-AM Combination Phono-Radio Superheterodyne with Loop Antenna
TUBES (EIGHT)	Types, 6BA6 RF Amp., 6BE6 Converter, 6SG7 1st IF Amp., 6SG7 2nd IF Amp., 6SH7 Limiter, 6S8GT Disc.-Det.-AVC-AF, 25L6GT Power Output, 25Z6GT Rectifier.
POWER SUPPLY	110-120 Volts AC — RATING .510 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	535-1630KC — FREQ. MOD. 87.5-109MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low freq. end of dial.

Use isolation transformer if available. If not, connect a .1 MFD capacitor in series with low side of signal generator and chassis.

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.05 MFD.	High side to rear "AM" stator of Tuning Cap. Low side to chassis.	455KC	BC (counter clock-wise)	600KC	Across voice coil	A1,A2, A3,A4, A5,A6.	Adjust for maximum output If isolation transformer is not used reduce dummy ant. to .001 MFD. to reduce hum modulation.
2	"	"	"	"	"	"	A7	Adjust for minimum output.
3		Loop	1500KC	"	1500KC	"	A8	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4		"	"	"	Tune for maximum output.	"	A9	Adjust for maximum output.
5		"	600KC	"	"	"	A10	Rock tuning cap. and adjust for maximum output. Repeat Steps 3, 4 & 5 until no further improvement can be made.

FOR FM ALIGNMENT SEE LAST PAGE OF THIS FOLDER.

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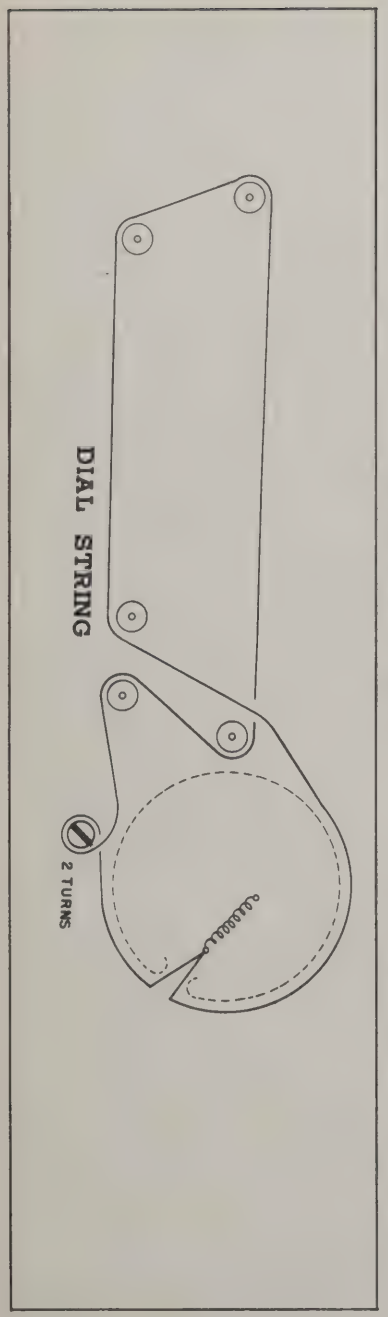
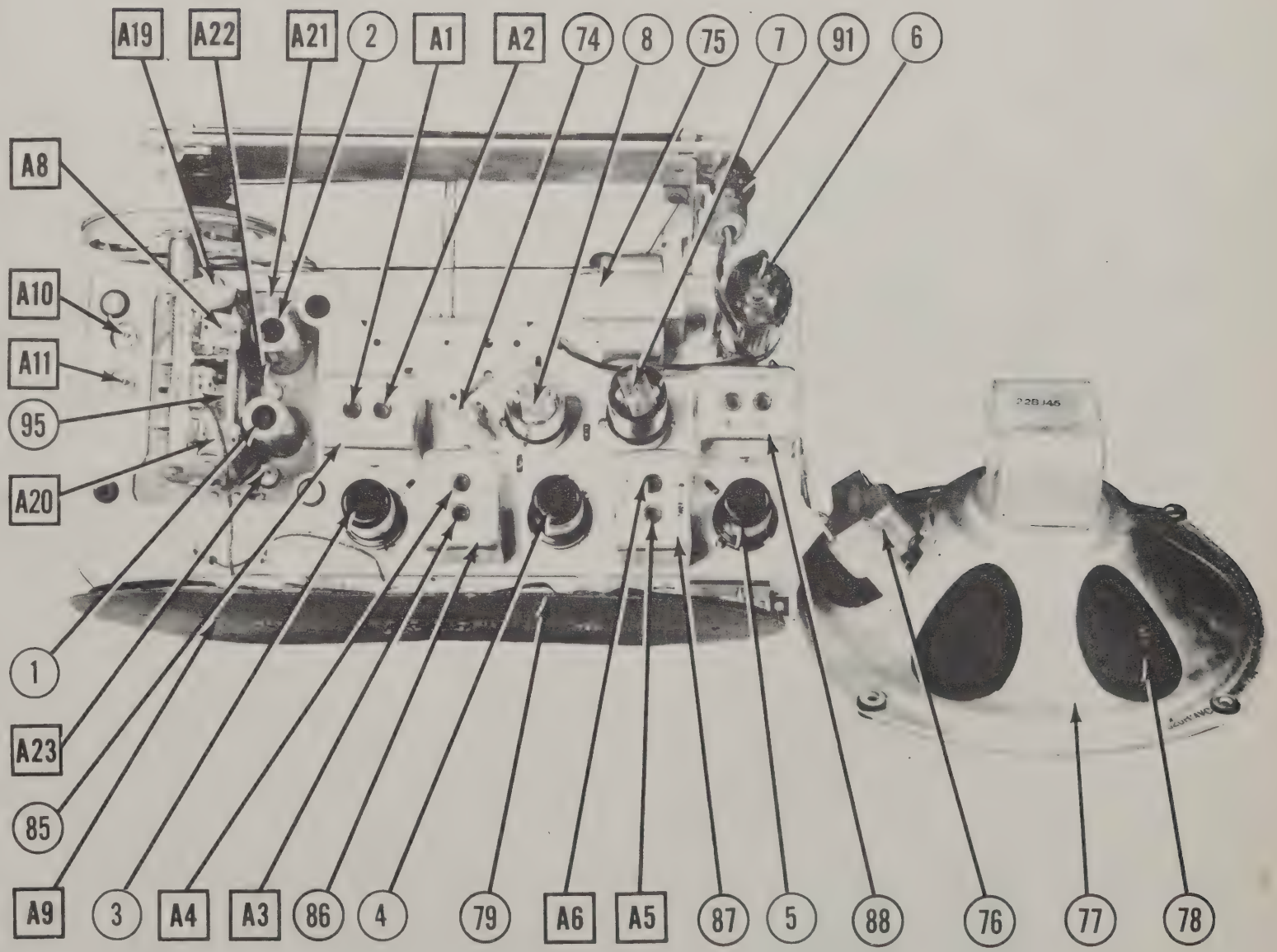
DATE 12/47 SET #29 FOLDER #4719-14

CHASSIS—TOP VIEW





MAJESTIC MODELS 8FM775 (Ch. 8BO8D), 8FM776 (Ch. 8BO7D) PAGE 3

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MAJESTIC PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6BA6	6BA6	7BK	
2	Converter	6BE6	6BE6	7CH	
3	1st IF Amp.	6SG7	6SG7	8BK	
4	2nd IF Amp.	6SG7	6SG7	8BK	
5	Limiter	6SH7	6SH7	8BK	
6	Disc.-Det.-AVC-AF	6S8GT	6S8GT	8CB	
7	Power Output	25L6GT	25L6GT	7AC	
8	Rectifier	25Z6GT	25Z6GT	7Q	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MAJESTIC PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: SOLAR PART No.	REPLACEMENT DATA: SPRAGUE PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
9A	100	150	19-37		DSB-804020-150‡			EZ532150	Filter - Red -See Note 1
B	20	150			" "			"	" - Blue
C	200	10			M-250-12			BRH1225	Cathode Bypass-Yellow
9A	50	150	19-44	2N520	DSB-5030-150	TA-530	PRSA150-50-30	BRD3515	Filter - Red-See Note 2
B	30	150			" "		" "	"	" - Blue
C	100	10		TC250	M-100-12	UhC112	PRS-25-100	BRH121	Cathode Bypass-Or.
10	20	150	19-32	TC45	M-20-150	UT-201	PRS150-20	BR2015	Filter
11	.05	400	016-8	TP426	MPh-4-05	TC-15	434-05	DT4S5	Line Filter
12	.01	600	017-5	TP410	S-6-01	TC-11	684-01	DT6S1	Output Plate Bypass
13	.01	400	016-5	TP421	S-4-01	TC-11	434-01	DT4S1	Audio Coupling
14	.005	600	017-4	TP408	S-6-005	TC-25	684-005	DT6D5	Tone Comp.
15	.01	200	015-5	TP421	S-4-01	TC-11	434-01	DT4S1	" "
16	.01	200	015-5	TP421	S-4-01	TC-11	434-01	DT4S1	Control Isolation
17	.002	600	017-2	TP405	S-6-002	TC-22	684-002	DT6D2	Audio Coupling
18	.01	400	016-5	TP421	S-4-01	TC-11	434-01	DT4S1	Limiter Plate Decoup.
19	.01	400	016-5	TP421	S-4-01	TC-11	434-01	DT4S1	RF Bypass Pwr. Supply
20	.01	400	016-5	TP421	S-4-01	TC-11	434-01	DT4S1	2nd IF Cathode Bypass
21	.01	400	016-5	TP421	S-4-01	TC-11	434-01	DT4S1	RF Bypass Pwr. Supply
22	.01	400	016-5	TP421	S-4-01	TC-11	434-01	DT4S1	AVC Filter
23	.05	200	015-8	TP426	S-4-05	TC-15	434-05	DT4S5	Phono Isolation
24	.01	400	016-5	TP421	S-4-01	TC-11	434-01	DT4S1	AVC Filter
25	.01	400	016-5	TP421	S-4-01	TC-11	434-01	DT4S1	RF Bypass Pwr. Supply
26	.005	600	017-4	TP408	S-6-005	TC-25	684-005	DT6D5	Audio Coupling
27	.05	200	015-8	TP426	S-4-05	TC-15	434-05	DT4S5	AVC Filter
28	.01	400	016-5	TP421	S-4-01	TC-11	434-01	DT4S1	Ext. Ant. Isolation
29	1000	300	6-230	MC255	MO.3-21	1FM-21	1468-001	1W5D1	Fil. Bypass Cer.
30	1000	300	6-230	MC255	MO.3-21	1FM-21	1468-001	1W5D1	" " "
31	1000	300	6-230	MC255	MO.3-21	1FM-21	1468-001	1W5D1	" " "
32	5000		6-259	MC465	MW.5-25	1FM-25	1467-005	1D5D5	" " "
33	5000		6-259	MC465	MW.5-25	1FM-25	1467-005	1D5D5	" " "
34	5000		6-259	MC465	MW.5-25	1FM-25	1467-005	1D5D5	" " "
35	220	500	6-151	MC240	MO.5-325	1FM-325	1468-00025	5W5T25	RF Bypass Pwr. Supply
36	220	500	6-151	MC240	MO.5-325	1FM-325	1468-00025	5W5T25	AF Plate Bypass
37	100	500	6-232	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	Disc. IF Bypass
38	5000		6-259	MC465	MW.5-25	1FM-25	1467-005	1D5D5	Limiter Screen Byp.Cer.
39	100	500	6-232	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	Limiter Grid Filter
40	5000		6-259	MC465	MW.5-25	1FM-25	1467-005	1D5D5	2nd IF Screen Byp. Cer.
41	220	500	6-151	MC240	MO.5-325	1FM-325	1468-00025	5W5T25	Diode RF Filter
42	5000		6-259	MC465	MW.5-25	1FM-25	1467-005	1D5D5	1st IF Screen Bypass-Cer.
43	1000	500	6-218	MC255	MO.3-21	1FM-21	1468-001	1W5D1	Fixed Pad
44	47	500	6-159	MC225	MO.5-45	1FM-45	1468-00005	5W5Q5	Osc. Grid Cer.
45	1000	300	6-230	MC255	MO.3-21	1FM-21	1468-001	1W5D1	Conv. Screen Byp. Cer.
46	1000	300	6-230	MC255	MO.3-21	1FM-21	1468-001	1W5D1	RF Coupling Cer.
47	1000	300	6-230	MC255	MO.3-21	1FM-21	1468-001	1W5D1	RF Screen Byp. Cer.
48	47	500	6-159	MC225	MO.5-45	1FM-45	1468-00005	5W5Q5	RF Cathode Byp. Cer.

*Parallel 50-30 sections and omit bypass section. ‡Parallel sections to obtain desired capacity.
Note 1 - Used in 8FM776 Note 2 - Used in 8FM775

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS: FIELD	RATINGS: VC IMP.	REPLACEMENT DATA: MAJESTIC PART No.	REPLACEMENT DATA: JENSEN PART No.	INSTALLATION NOTES
77A	PM	3.4Ω	22-45	ST-119# Mod. P10-T	Used in Model 8FM776 #Replace output transformer to match 6-8Ω voice coil.
B	PM	3.2Ω	22-42	ST-115† Mod. P8-V	Used in Model 8FM775 †Fabricate new mounting bracket.
	CONE DIA.	VC DIA.			
78A	9-1/4"	1"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.		
B	7-3/8"	1/2"	CONE HAS SPECIAL ADJUSTMENT FEATURE-ORDER FROM MANUFACTURER		

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: MAJESTIC PART No.	REPLACEMENT DATA: MEISSNER PART No.	
79	Loop Ant.	.2Ω	1.2Ω	S-1400		
80	FM Ant.					
81	FM Ant.Coil	0Ω	0Ω	S-1407		
82	FM RF Coil		0Ω	S-1408		
83	AM Osc.Coil		5Ω	S-1411	14-1040	
84	FM Osc.Coil		0Ω	S-1409		Items 85A & 85B in same can.
85A	AM Input IF	6.5Ω	6.5Ω	S-1389		
B	FM 1st IF	.2Ω	.2Ω			
86A	AM Inter.IF	6.5Ω	6.5Ω	S-1390		Items 86A & 86B in same can.
B	FM 2nd IF	.2Ω	.2Ω			
87A	AM OutputIF	6.5Ω	6.5Ω	S-1391		Items 87A & 87B in same can.
B	FM 3rd IF	.2Ω	.2Ω			
88	Disc. Trans.	.2Ω	.2Ω	S-1392		
89	Wave Trap		21Ω	S-1410		
90	RF Choke		.2Ω	S-1384		

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: MAJESTIC PART No.	REPLACEMENT DATA	INSTALLATION NOTES
91	Bayonet	115-125 V.					

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA: MAJESTIC PART No.	REPLACEMENT DATA: ASTATIC PART No.	REMARKS
92		L-70	

MISCELLANEOUS

ITEM No.	PART NAME	MAJESTIC PART No.	NOTES
93	Band Switch	11-71	Shaft
		11-71-1	Wafer, Sect. 1
		11-71-2	" " 2
		11-71-3	" " 3
94	Switch	11-72	Radio-Phono
95	Tuning Cap.	7-25	AM (17-500MMF, 17-500MMF)
A7	Trimmer	8-63	Wave-Trap Adj.
A8	"	8-35	BC Osc. Adj.
A9	"	8-59	BC Ant. Adj.
A10	Padder	8-65	BC Osc. Adj.
A19	Trimmer	8-38	FM Osc. Adj.
A20	"	8-35	FM Ant. Adj.
	Dial Scale	117-95	
	Dial Pointer	136-21	

PARTS LIST AND DESCRIPTIONS (Continued)

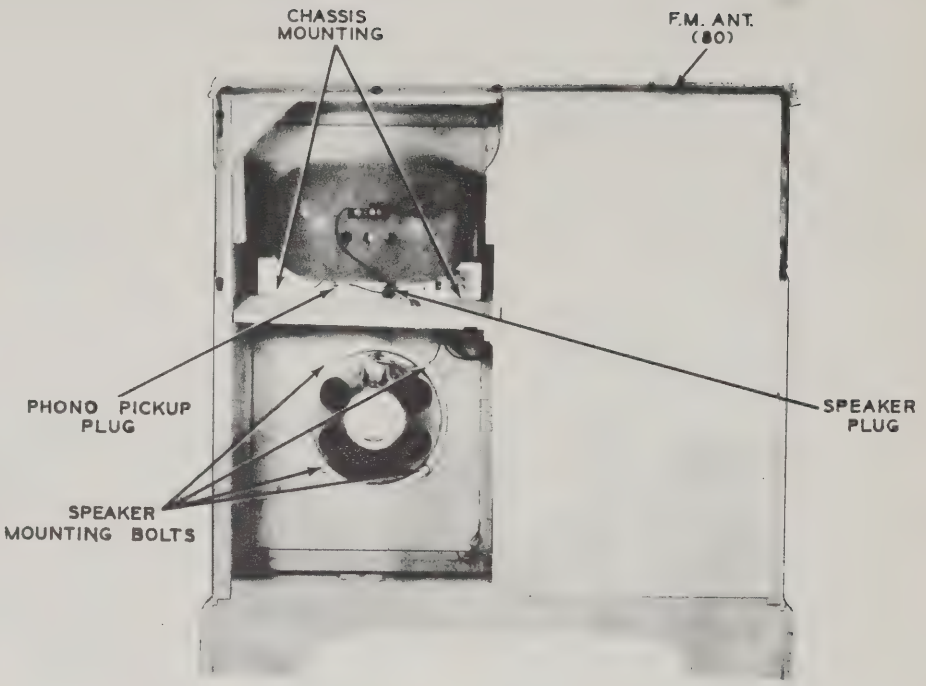
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	MAJESTIC PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
49	500KΩ-2 Meg.	½	03-32				Volume-Tone Control - Off-On Sw. This is a dual control operated by a concentric shaft.

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	MAJESTIC PART No.	IRC PART No.	
50	470KΩ	¼	01-199	BTS-470K	Yl.-Vl.-Yl. AVC Network
51	47KΩ	¼	01-157	BTS-47K	Yl.-Vl.-Or. Converter Grid
52	68Ω	¼	01-37	BW-½-68	Blue-Gray-Blk. RF Cathode
53	3300Ω	½	02-108	BTS-3300	Or.-Or.-Red RF Plate Load
54	10Ω	¼	01-3	BW-½-10	Br.-Blk.-Blk. Parasitic Suppressor
55	22KΩ	¼	01-143	BTS-22K	Red-Red-Or. Oscillator Grid
56	2200Ω	¼	01-101	BTS-2200	Red-Red-Red Screen Dropping
57	470KΩ	¼	01-199	BTS-470K	Yl.-Vl.-Yl. AVC Network
58	2.2 Meg.	¼	01-227	BTS-2.2 Meg.	Red-Red-Grn. " "
59	22KΩ	¼	01-143	BTS-22K	Red-Red-Or. Diode RF Filter
60	470KΩ	¼	01-199	BTS-470K	Yl.-Vl.-Yl. Diode Load
61	47KΩ	¼	01-157	BTS-47K	Yl.-Vl.-Or. Limiter Grid
62	3300Ω	1		BTA-3300	Or.-Or.-Red Limiter Screen Bleeder
63	12KΩ	½	02-132	BTS-12K	Br.-Red-Or. Limiter Screen Dropping
64	470KΩ	¼	01-199	BTS-470K	Yl.-Vl.-Yl. Series Test Jack
65	47KΩ	¼	01-157	BTS-47K	Yl.-Vl.-Or. Limiter plate Decoupling
66	470KΩ	¼	01-199	BTS-470K	Yl.-Vl.-Yl. AF Plate Load
67	4.7 Meg.	¼		BTS-4.7 Meg.	Yl.-Vl.-Grn. AF Grid - See Note 1
68	12KΩ	¼	01-132	BTS-12K	Br.-Red-Or. Tone Compensation
69	470KΩ	¼	01-199	BTS-470K	Yl.-Vl.-Yl. Output Grid
70	150Ω	½	02-52	BW-½-150	Br.-Grn.-Br. Output Cathode
71	100Ω	¼	01-145	BW-½-100	Filter - See Note 2
72	36Ω	1		BW-1-33	Or.-Blue-Blk. Surge Limiter - See Note 3
73	390Ω	2	04-69	BW-2-390	Or.-White-Br. Series Pilot Light
74	100Ω		9-332	DG-100	Line Dropping
96	2.2 Meg.	¼	01-143	BTS-2.2 Meg.	Red-Red-Grn. Series Phono
97	68Ω	¼	01-37	BW-½-68	Blue-Gray-Blk. IF Cathode

Note 1 - Some models use 10 Meg. in this application. IRC replacement BTS-10 Meg.
Note 2 - Some models use two 150Ω resistors in parallel.
Note 3 - Some models use 27Ω in this application. IRC replacement BW-1-27.



DISASSEMBLY INSTRUCTIONS

1. Remove two push-on type control knobs.
2. Loosen set screw and remove third control knob.
3. Remove FM antenna leads from terminal strip on back of loop antenna.
4. Remove four wood screws holding cover over back of chassis. Remove cover.
5. Disconnect phono-motor plug.
6. Remove speaker plug from chassis.
7. Remove phono-pickup plug from chassis.
8. Remove ground lead from terminal strip on back of loop antenna.
9. Remove four screws holding chassis in cabinet. Remove chassis from cabinet.
10. Remove four hex nuts holding speaker in cabinet. Remove speaker from cabinet.

FILTER CHOKE

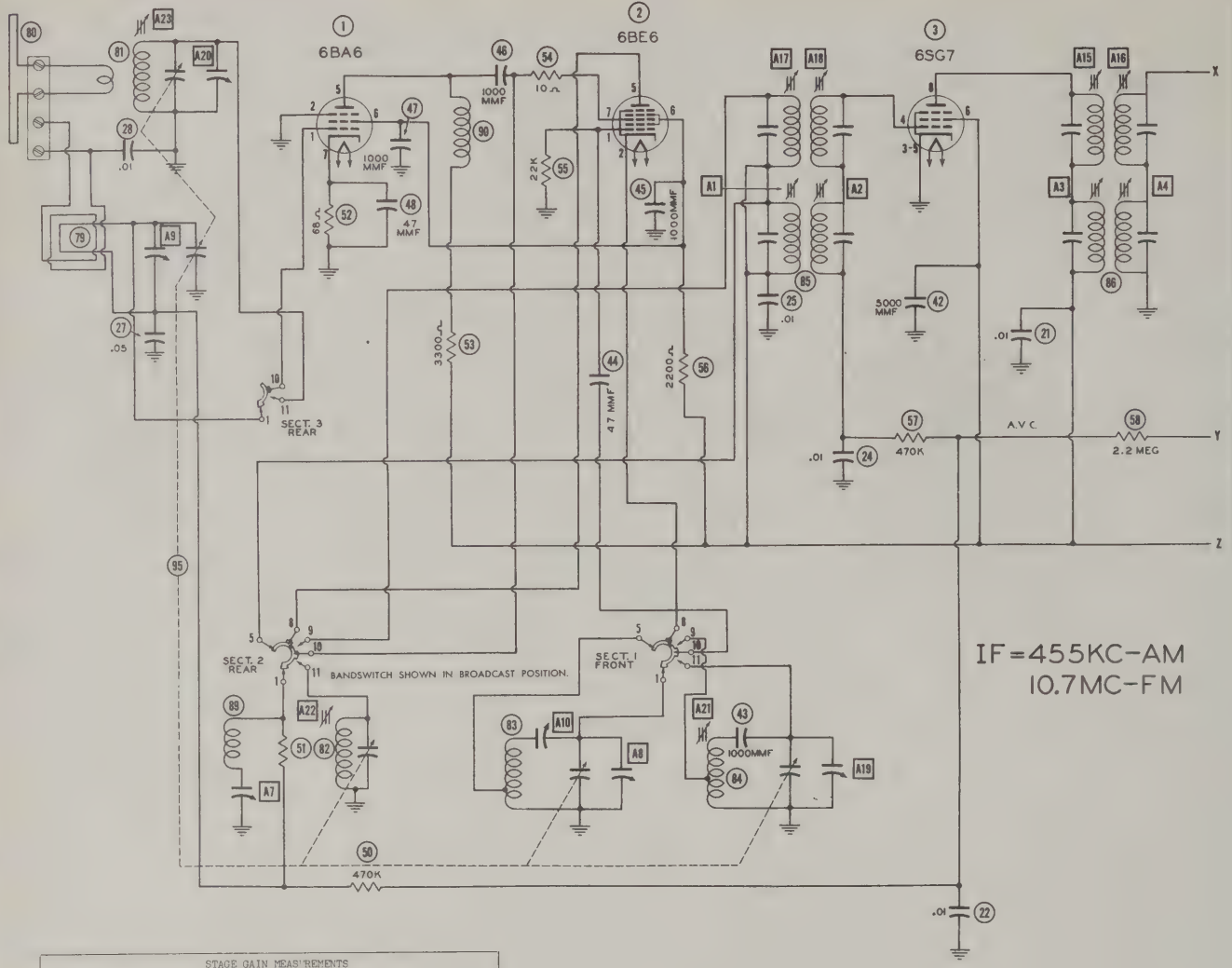
ITEM NO.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	MAJESTIC PART NO.	STANCOR PART NO.	THORDARSON PART NO.	MERIT PART No.	
75	.058A	100Ω	3.4 Henries	2-32	C-1706§	T20C53§	C-2977	§Drill one new mounting hole.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MAJESTIC PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
76A	2000Ω	3.4Ω	190Ω	.5Ω	Part of 22-45	A-3849	T22S87	A-2902	Used in Model 8FM776
B	2100Ω	3.2Ω	220Ω	.6Ω	Part of 22-42	A-3876	T22S45	A-2923	" " " 8FM775

DATE 12/47
SST #29
FOLDER #4719-14

MAJESTIC MODELS 8FM775 (Ch. 8B08D), 8FM776 (Ch. 8B07D) PAGE 5



STAGE GAIN MEASUREMENTS

ANT. TO RF GRID	10X		600KC
RF GRID TO CONV. GRID	4X		600KC
CONV. GAIN	12X	IN	600KC
		OUT	455KC
1st IF TRANS.	.4X		455KC
1st IF TUBE	25X		455KC
2nd IF TRANS.	.55X		455KC
2nd IF TUBE	90X		455KC
3rd IF TRANS.	.65X		455KC
AUDIO	40X		400~
OUTPUT	15X		400~

VOLTAGE READINGS TAKEN IN BROADCAST POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6BA6	-.2VDC	0V.	24VAC	30VAC	85VDC	85VDC	.9VDC	-
2	6BE6	-7VDC§	0V.	36VAC	30VAC	105VDC	85VDC	-.2VDC	-
3	6SG7	0V.	18VAC	0V.	-.6VDC	0V.	105VDC	24VAC	105VDC
4	6SG7	0V.	12VAC	.7VDC	0V.	.7VDC	105VDC	18VAC	105VDC
5	6SH7	0V.	6VAC	0V.	-.4VDC	0V.	22VDC	12VAC	85VDC
6	6S8GT	-.4VDC	0V.	-.4VDC	-.5VDC	-.1VDC	53VDC	0V.	6VAC
7	25L6GT	0V.	60VAC	100VDC	105VDC	0V.	105VDC	36VAC	7.2VDC
8	25Z6GT	88VAC	60VAC	117VAC	105VDC	117VAC	110VDC	85VAC	115VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

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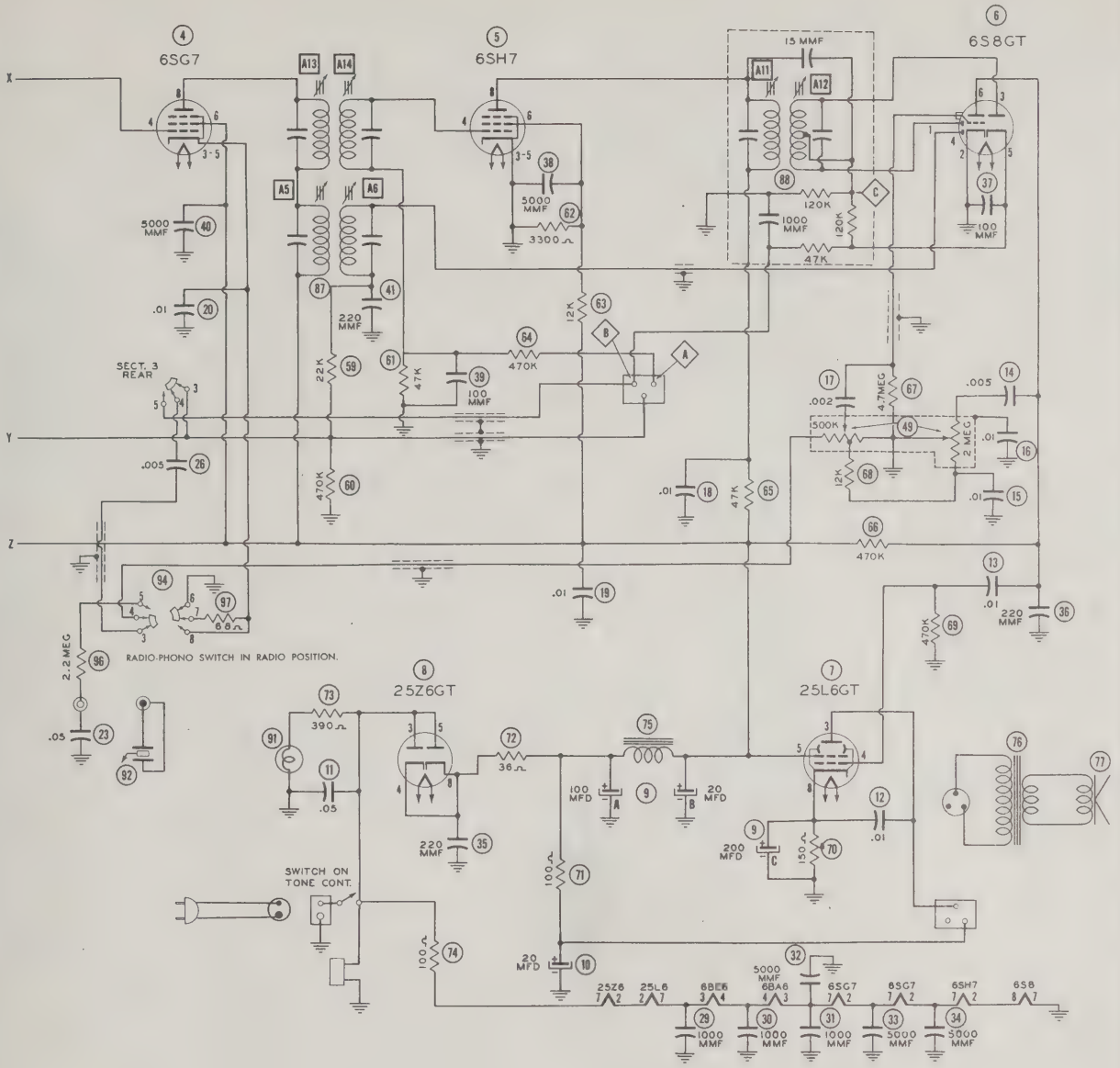
4719-14

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.



RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6BA6	4 Meg.	0Ω	14Ω	1-Ω	19KΩ	1HKΩ	6-Ω	-
2	6BE6	22KΩ	.6Ω	22Ω	1ΩΩ	16KΩ	1HKΩ	4 Meg.	-
3	6SG7	0Ω	11Ω	0Ω	4 Meg.	0Ω	18KΩ	14Ω	.16KΩ
4	6SG7	0Ω	6Ω	65Ω	6.5Ω	65Ω	16KΩ	11Ω	16KΩ
5	6SH7	0Ω	3%	0Ω	47KΩ	3Ω	3.3KΩ	6Ω	62KΩ
6	6S8GT	120KΩ	0Ω	120KΩ	480KΩ	270KΩ	480KΩ	0Ω	3%
7	25L6GT	0Ω	31Ω	16KΩ	16KΩ	500KΩ	16KΩ	22Ω	150Ω
8	25Z6GT	150Ω	31Ω	115Ω	16KΩ	115Ω	16KΩ	41Ω	16KΩ

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RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

4719-14

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

FM ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

(Connect synchronized sweep voltage from signal generator to horizontal amplifier.)

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
6	.05 MFD.	High side to Pin 4 (grid) of 6SG7 2nd IF Tube (4). Low side to chassis.	10.7MC (Freq. modulated at 60 ∿, 300KC deviation.)	FM (clockwise)	88MC	Vertical amplifier to Pin #3 of test socket (Point A). Ground to chassis.	A13,A14	Adjust for maximum amplitude and symmetry of pattern per Fig. 1.
7	.05 MFD.	High side to Pin 4 (grid) of 6SG7 1st IF tube (3). Low side to chassis.	"	"	"	"	A15,A16	"
8	.05 MFD.	High side to junction of wave trap and resistor 51 low side to chassis.	"	"	"	"	A17,A18	"
9	.05 MFD.	"	"	"	"	Vertical amplifier to Pin #1 of test socket (Point B). Ground terminal to chassis	A11,A12	Adjust for maximum amplitude and symmetry with maximum straightness of diagonal line per Fig. 2.
10	300Ω carbon res.	High side to one FM dipole terminal in series with 300Ω. Low side to other dipole terminal.	106MC (Freq. modulated at 60 ∿, 300KC deviation.)	"	106MC	Vertical amplifier to Point A. Ground to chassis	A19	Center the pattern in the center of the scope sweep line per Fig. 1.
11	"	"	"	"	"	"	A20	Adjust for maximum amplitude.
12	"	"	88MC (Freq. modulated at 60 ∿, 300KC deviation.)	"	88MC	"	A21	Center the pattern in the center of the scope sweep line per Fig. 1.
13	"	"	"	"	"	"	A22,A23	Adjust for maximum amplitude.

FIGURE 1

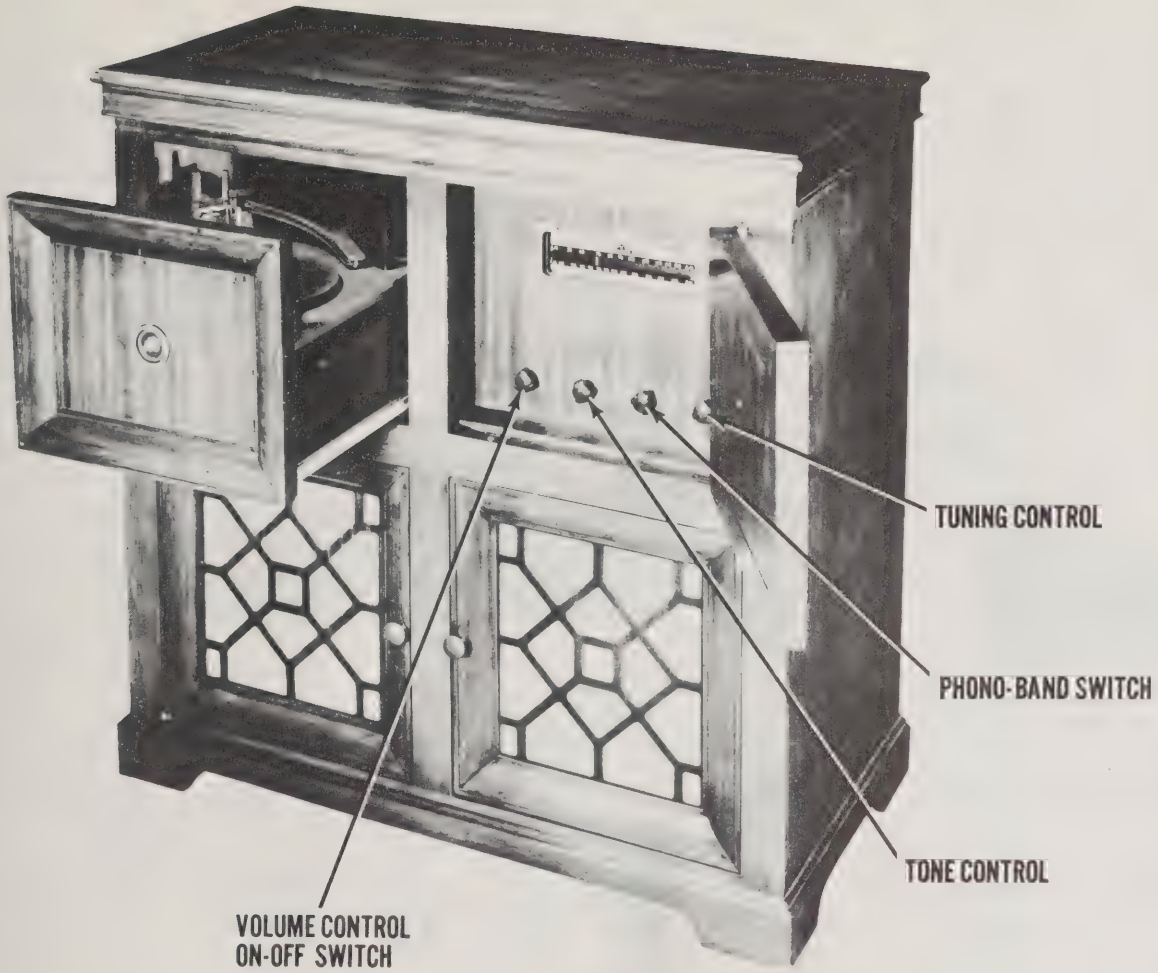
FM ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
6	.05 MFD.	High side to Pin 4 (grid) of 6SH7. Low side to chassis.	10.7MC (unmodulated)	FM (clockwise)	88MC	DC probe to blank terminal of disc. trans. #88 (Point C). Common lead to chassis.	A11	Adjust for maximum deflection.
7	.05 MFD	"	"	"	"	DC probe to point B. Common lead to chassis.	A12	Use a zero center scale VTVM if available. Adjust for zero reading.
8	.05 MFD	High side to Pin 4 (grid) of 6SG7 2nd IF Tube #4. Low side to chassis.	"	"	"	DC probe to Point A. Common lead to chassis.	A13,A14	Adjust for maximum deflection.
9	.05 MFD	High side to Pin 4 (grid) of 6SG7 1st IF Tube #3. Low side to chassis.	"	"	"	"	A15,A16	"
10	.05 MFD	High side to junction of wave trap coil and resistor 51. Low side to chassis.	"	"	"	"	A17,A18	"
11	300Ω car.res.	High side to one FM dipole terminal in series with 300Ω. Low side to other dipole terminal.	106MC	"	106MC	"	A19	"
12	"	"	"	"	Tune for maximum deflection.	"	A20	"
13	"	"	88MC	"	88MC	"	A21	"
14	"	"	"	"	Tune for maximum deflection.	"	A22, A23	Adjust for maximum deflection. Repeat Steps 11, 12, 13 and 14 until no further improvement can be made.

FIGURE 2

FOR AM ALIGNMENT SEE FRONT PAGE OF THIS FOLDER.

MONITOR
MODEL M-3070



MONITOR
MODEL M-3070

MONITOR MODEL M-3070

TRADE NAME	Monitor, Model M-3070
MANUFACTURER	Monitor Equipment Co., Riverdale, New York 63, N.Y.
TYPE SET	AC Operated FM-AM Radio-Phono Combination Superheterodyne with Loop Ant.
TUBES(ELEVEN)	Types, 6BA6 FM RF Amp., 6BE6 FM Mixer, 6C4 FM Osc., 6SK7 AM RF Amp., 6SA7 AM Converter, 6SK7 AM-FM IF Amp., 6SH7 FM IF Amp., 6H6 FM Det., 6SQ7 AM Det.-AVC-AF, 6V6GT Power Output, 5Y3GT Rectifier.
POWER SUPPLY	105-125 Volts AC
RATING	.660 Amp. @ 117 Volts AC
TUNING RANGE - BROADCAST	540-1600KC FREQ. MOD. 88-108MC

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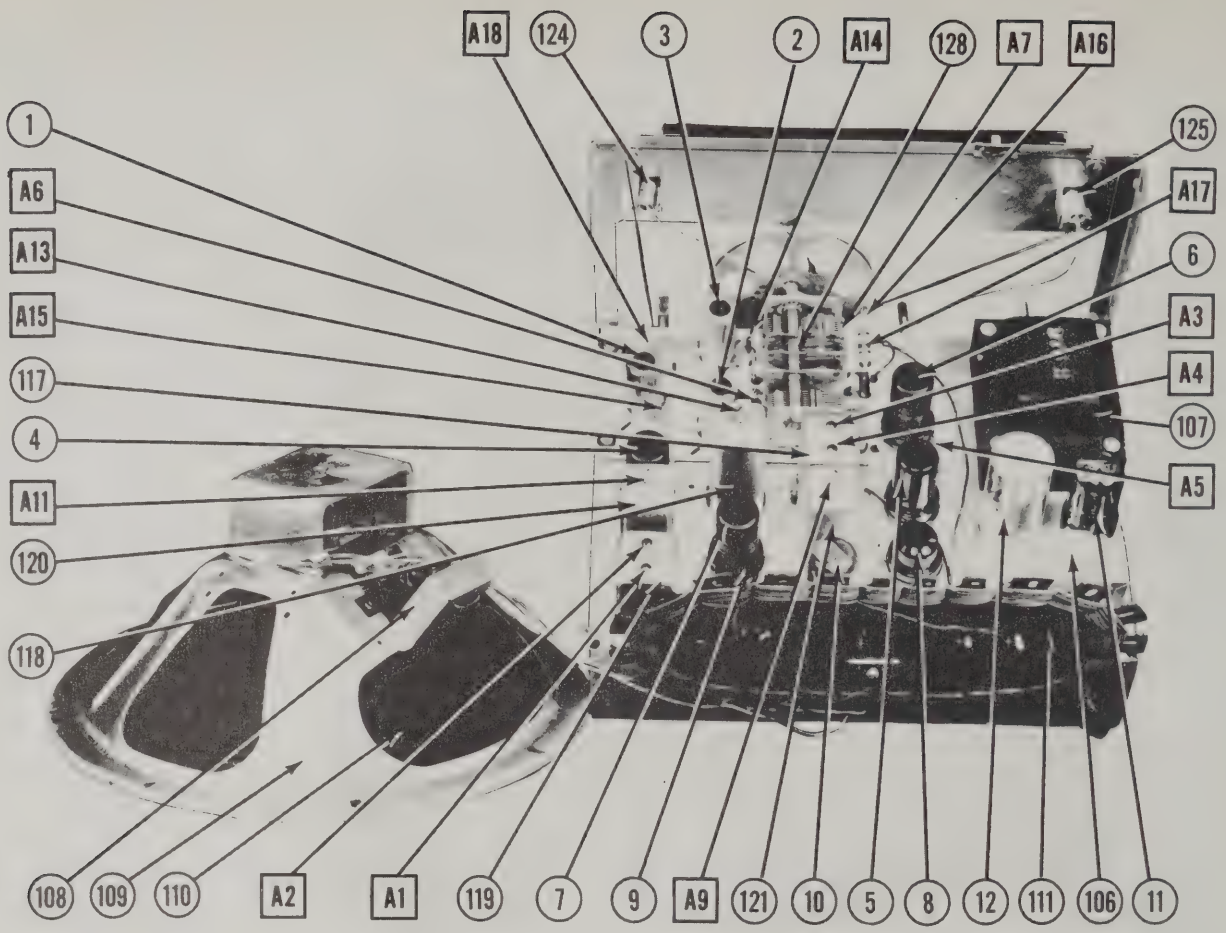
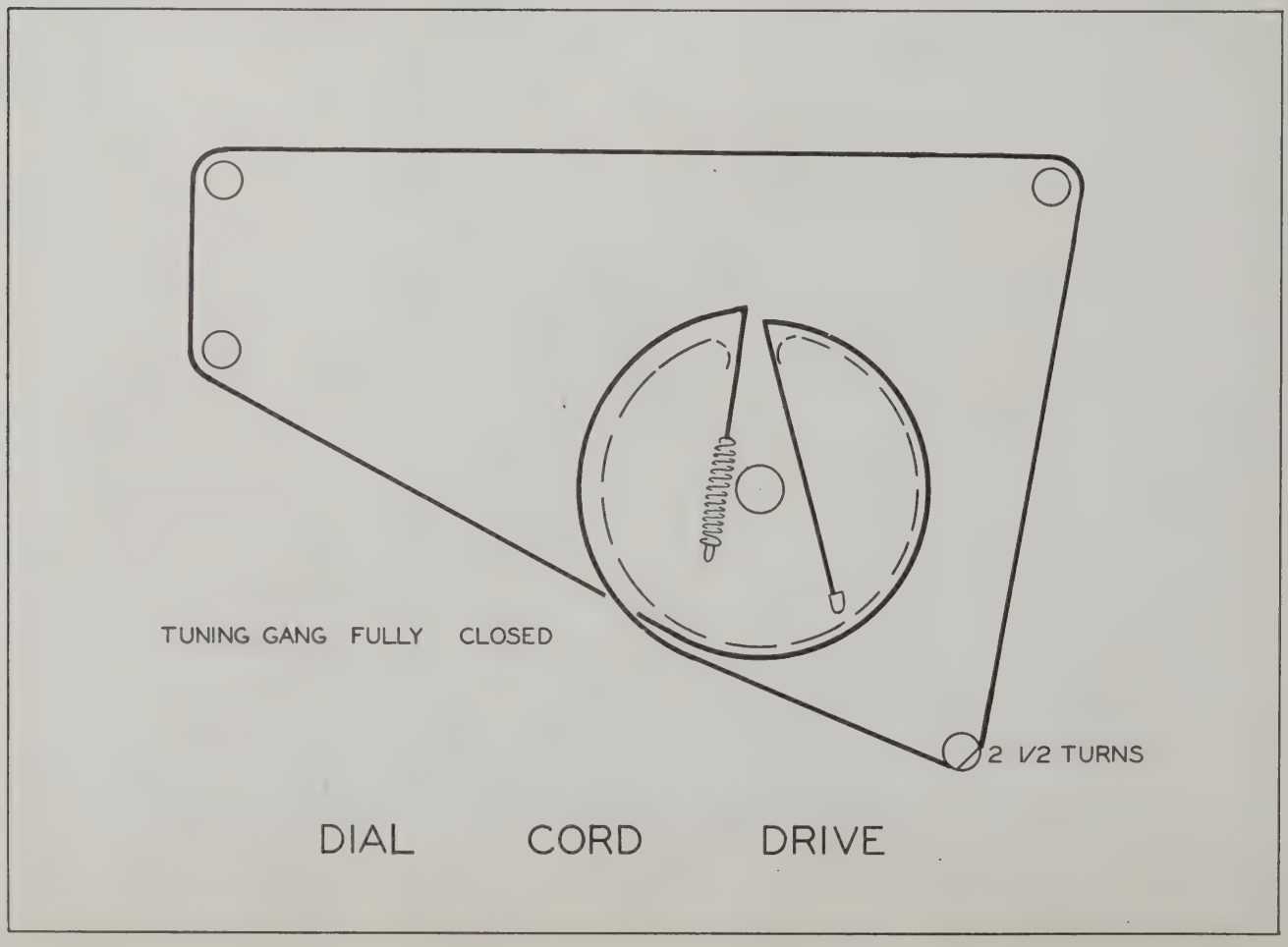
DATE 12/47 SET #29 FOLDER #4719-15

CHASSIS—TOP VIEW





DIAL CORD DRIVE

MONITOR
MODEL M-3070 PAGE 3

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MONITOR PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	FM RF Amp.	6BA6	6BA6	7BK	
2	FM Mixer	6BE6	6BE6	7CH	
3	FM Osc.	6C4	6C4	6BG	
4	AM RF Amp.	6SK7	6SK7	8N	
5	AM Converter	6SA7	6SA7	8R	
6	AM-FM IF Amp.	6SK7	6SK7	8N	
7	FM IF Amp.	6SH7	6SH7	8BK	
8	FM Det.	6H6	6H6	7Q	
9	AM Det.-AVC-AF	6SQ7	6SQ7	8Q	
10	Power Output	6V6GT	6V6GT	7AC	
11	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MONITOR PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
12A	40	450	CD-1248	FP238	DY-2x40-450	EL-240	AF88J	UP4445	◓ Filter
B	40	450							■ "
13	8	450	CD-1247	TC71	M-8-450	UT-8	PRS450-8	BR845	"
14	8	450	CD-1247	TC71	M-8-450	UT-8	PRS450-8	BR845	Stabilizing Cap.
15	50	50	CD-1246	TC39	M-50-50	TA-550	PRS50-50	BR505	Output Cathode Bypass
16	.01	400	CD-1227-8	TP421	MPR-4-01	TC-11	484-01	DT4S1	Line Filter
17	.02	400	CD-1227-10	TP423	S-4-02	TC-12	484-02	DT4S2	Tone Comp.
18	.02	400	CD-1227-10	TP423	S-4-02	TC-12	484-02	DT4S2	Audio Coupling
19	.02	400	CD-1227-10	TP423	S-4-02	TC-12	484-02	DT4S2	" "
20	.02	400	CD-1227-10	TP423	S-4-02	TC-12	484-02	DT4S2	Tone Comp.
21	.01	400	CD-1227-8	TP421	S-4-01	TC-11	484-01	DT4S1	Audio Coupling
22	.002	400	CD-1227-3	TP405	S-6-002	TC-22	484-002	DT6D2	De-emphasis
23	.01	400	CD-1227-8	TP421	S-4-01	TC-11	484-01	DT4S1	2nd IF Plate Decoup.
24	.1	400	CD-1227-15	TP428	S-4-1	TC-1	484-.1	DT4P1	AVC Filter
25	.01	400	CD-1227-8	TP421	S-4-01	TC-11	484-01	DT4S1	Audio Coupling
26	.02	400	CD-1227-10	TP423	S-4-02	TC-12	484-02	DT4S2	RF Bypass Pwr. Supply
27	.01	400	CD-1227-8	TP421	S-4-01	TC-11	484-01	DT4S1	2nd IF Screen Bypass
28	.01	400	CD-1227-8	TP421	S-4-01	TC-11	484-01	DT4S1	2nd IF Cathode Bypass
29	.01	400	CD-1227-8	TP421	S-4-01	TC-11	484-01	DT4S1	1st IF Plate Decoup.
30	.01	400	CD-1227-8	TP421	S-4-01	TC-11	484-01	DT4S1	1st IF Screen Bypass
31	.01	400	CD-1227-8	TP421	S-4-01	TC-11	484-01	DT4S1	AVC Filter
32	.01	400	CD-1227-8	TP421	S-4-01	TC-11	484-01	DT4S1	AM Conv. Plate Decoup.
33	.01	400	CD-1227-8	TP421	S-4-01	TC-11	484-01	DT4S1	FM Mixer Plate Decoup.
34	.01	400	CD-1227-8	TP421	S-4-01	TC-11	484-01	DT4S1	AM Conv. Screen Byp.
35	.01	400	CD-1227-8	TP421	S-4-01	TC-11	484-01	DT4S1	AVC Filter
36	.01	400	CD-1227-8	TP421	S-4-01	TC-11	484-01	DT4S1	AM RF Screen Bypass
37	.01	400	CD-1227-8	TP421	S-4-01	TC-11	484-01	DT4S1	AVC Filter
38	.01	400	CD-1227-8	TP421	S-4-01	TC-11	484-01	DT4S1	" "
39	.01	400	CD-1227-8	TP421	S-4-01	TC-11	484-01	DT4S1	FM RF Screen Bypass
40	.002	400	CD-1227-3	TP405	S-6-002	TC-22	484-002	DT6D2	FM Ant. Isolation
41	.05	400	CD-1227-13	TP426	S-4-05	TC-15	484-05	DT4S5	RF Bypass Pwr. Supp.
42	1000	500	CD-1160-5	MC255	MO.3-21	1FM-21	1468-001	1W5D1	Output Plate Bypass
43	100	500	CD-1071-22	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	AF Plate Bypass
44	100	500	CD-1071-22	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	Diode Load Cap.
45	100	500	CD-1071-22	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	" " "
46	100	500	CD-1071-22	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	Diode RF Filter
47	100	500	CD-1071-22	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	" " "
48	100	500	CD-1071-22	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	AM Osc. Grid
49	1000	500	CD-1085-20	MC255	MO.3-21	1FM-21	1468-001	1W5D1	RF Coupling
50	100	500	CD-1157-13	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	FM Osc. Grid Cap.
51	5	500	CD-1245-1	MCB205	MOS.5-55	MS-55	1469-000005	5R5V5	FM Osc. Feedback
52	1000	500	CD-1160-5	MC255	MO.3-21	1FM-21	1468-001	1W5D1	FM Osc. Plate Decoup.
53	50	500	CD-1245-5	MCB225	MOS.5-45	MS-45	1469-000005	5R5J5	FM Osc. Fixed Pad.
54	10	500	CD-1245-2	MCB215	MOS.5-41	MS-41	1469-00001	5R5Q1	FM Osc. Coupling
55	1000	300	CD-1085-20	MC255	MO.3-21	1FM-21	1468-001	1W5D1	FM Mixer Screen Bypass
56	1000	300	CD-1085-20	MC255	MO.3-21	1FM-21	1468-001	1W5D1	FM Mixer Cathode Byp.
57	90	500	CD-1158-17						Fixed Pad. FM
58	1000	500	CD-1160-5	MC255	MO.3-21	1FM-21	1468-001	1W5D1	FM RF Coupling
59	1000	500	CD-1160-5	MC255	MO.3-21	1FM-21	1468-001	1W5D1	FM RF Plate Decoup.
60	100	500	CD-1157-13	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	FM RF Cathode Bypass
61	100	500	CD-1157-13	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	RF Coupling

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: MONITOR PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
108	3700Ω	3.7Ω	180Ω	.7Ω	TR-1060	A-3849	T22S87	A-2902	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: MONITOR PART No.	JENSEN PART No.	INSTALLATION NOTES
109	FIELD PM	VC IMP. 3.7Ω	SK-1016	ST-102# Mod. P12-S	#Replace output transformer to match 6Ω voice coil.
110	CONE DIA. 11-3/4"	VC DIA. 1-1/4"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.		

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: MONITOR PART No.	MEISSNER PART No.
111	Loop Ant.	.1Ω	1.2Ω	AT-1019	
112	FM Ant.			AS-3599	
113	FM Ant.Coil	0Ω	0Ω	TR-1064	
114	FM RF Coil		0Ω	CI-1057	
115	AM Osc.Coil		5Ω	CI-1059	
116	FM Osc.Coil		0Ω	CI-1058	
117	AM Input IF	19Ω	20Ω	TR-1052	16-6658
118	FM Input IF	.3Ω	.3Ω	TR-1065	
119	AM OutputIF	28Ω	24Ω	TR-1051	16-6660
120	FM 3nd IF	.3Ω	.3Ω	TR-1065	
121	Ratio Det.	.3Ω	1Ω	TR-1066	
122	RF Choke		.1Ω	CK-1036	
123	RF Choke		.1Ω	CK-1036	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: MONITOR PART No.	INSTALLATION NOTES
124	Bayonet	6-8	.15	Brown	LA-1014-32	Type 47
125	"	"	"	"	LA-1014-32	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA: MONITOR PART No.	REPLACEMENT DATA: ASTATIC PART No.	REMARKS
126		QT3-M	

MISCELLANEOUS

ITEM No.	PART NAME	MONITOR PART No.	NOTES
127	Switch	SW-1069	Band-Phono
128	Tuning Cap.	CDC-5001	AM (28-465MMF, 31-192MMF)

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	MONITOR PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
62A	500KΩ	½	RE-1131	MTC33	D13-133A	T-98	Volume Control
b	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 62A per instructions
C	Switch		" "	M26	41	SW-A	" " " "
63A	250KΩ	½	RE-1130	MR44	D13-130	M-64-3	Tone Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 63A per instructions

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	MONITOR PART No.	IRC PART No.	
64	100KΩ	½	RE-1166-107	BTS-100K	Br.-Blk.-Yl. FM-RF Grid
65	68Ω	½	RE-1139-683	BW-½-68	Blue-Gray-Blk. FM-RF Cathode
66	22KΩ	½	RE-1166-226	BTS-22K	Red-Red-Or. FM-RF Screen Dropping
67	10KΩ	1	RE-1168-106	BTA-10K	Br.-Blk.-Or. FM-RF Plate Decoupling
68	22KΩ	½	RE-1166-226	BTS-22K	Red-Red-Or. FM Mixer Grid
69	100KΩ	½	RE-1166-107	BTS-100K	Br.-Blk.-Yl. AVC Network
70	100Ω	½	RE-1139-104	BW-½-100	Br.-Blk.-Br. FM Mixer Cathode
71	22KΩ	½	RE-1166-226	BTS-22K	Red-Red-Or. FM Injector Grid
72	150KΩ	½	RE-1062-157	BTS-150K	Br.-Grn.-Yl. FM Mixer Screen Bleeder
73	22KΩ	1	RE-1168-226	BTA-22K	Red-Red-Or. FM Mixer Screen Dropping
74	10KΩ	1	RE-1168-106	BTA-10K	Br.-Blk.-Or. FM Mixer Plate Decoupling
75	22KΩ	½	RE-1166-226	BTS-22K	Red-Red-Or. FM Oscillator Grid
76	10KΩ	1	RE-1168-106	BTA-10K	Br.-Blk.-Or. FM Oscillator Decoupling
77	100KΩ	½	RE-1166-107	BTS-100K	Br.-Blk.-Yl. AVC Network
78	100KΩ	½	RE-1166-107	BTS-100K	Br.-Blk.-Yl. " "
79	100Ω	½	RE-1139-104	BW-½-100	Br.-Blk.-Br. AM-RF Cathode
80	47KΩ	1	RE-1166-476	BTA-47K	Yl.-Vi.-Or. AM-RF Screen Dropping
81	10KΩ	2	RE-1046-106	BT-2-10K	Br.-Blk.-Or. AM-RF Plate Load
82	100KΩ	½	RE-1166-107	BTS-100K	Br.-Blk.-Yl. AM Converter Grid
83	27KΩ	2	RE-1046-276	BT-2-27K	Red-Vi.-Or. AM Converter Screen Dropping
84	22KΩ	½	RE-1166-226	BTS-22K	Red-Red-Or. AM Oscillator Grid
85	1000Ω	½	RE-1166-105	BTS-1000	Br.-Blk.-Red AM Converter Plate Decoupling
86	100Ω	½	RE-1139-104	BW-½-100	Br.-Blk.-Br. 1st IF Cathode
87	22KΩ	½	RE-1166-226	BTS-22K	Red-Red-Or. 1st IF Screen Bleeder
88	22KΩ	1	RE-1168-226	BTA-22K	Red-Red-Or. 1st IF Screen Dropping
89	1000Ω	½	RE-1166-105	BTS-1000	Br.-Blk.-Red 1st IF Plate Decoupling
90	1 Meg.	½	RE-1139-108	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
91	47KΩ	½	RE-1166-476	BTS-47K	Yl.-Vi.-Or. Diode RF Filter
92	470KΩ	½	RE-1166-477	BTS-470K	Yl.-Vi.-Yl. Diode Load
93	100Ω	½	RE-1139-104	BW-½-100	Br.-Blk.-Br. 2nd IF Cathode
94	33KΩ	1	RE-1168-336	BTA-33K	Or.-Or.-Or. 2nd IF Screen Dropping
95	2200Ω	½	RE-1166-225	BTS-2200	Red-Red-Red 2nd IF Plate Decoupling
96	220Ω	½	RE-1139-224	BW-½-220	Red-Red-Br. Balancing
97	22KΩ	½	RE-1166-226	BTS-22K	Red-Red-Or. De-emphasis
98	6800Ω	½	RE-1166-685	BTS-6800	Blue-Gray-Red Diode Load
99	6800Ω	½	RE-1166-685	BTS-6800	Blue-Gray-Red " "
100	1 Meg.	½	RE-1139-108	BTS-1 Meg.	Br.-Blk-Grn. AVC Network
101	22KΩ	½	RE-1166-226	BTS-22K	Red-Red-Or. Tone Compensation
102	10 Meg.	½	RE-1139-109	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
103	470KΩ	½	RE-1166-477	BTS-470K	Yl.-Vi.-Yl. AF Plate Load
104	470KΩ	½	RE-1166-477	BTS-470K	Yl.-Vi.-Yl. Output Grid
105	270Ω	1	RE-1063-274	BW-1-270	Red-Vi.-Br. Output Cathode

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FILTER CHOKE

ITEM NO.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D.C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	MONITOR PART NO.	STANCOR PART NO.	THORDARSON PART NO.	MERIT PART No.	
106	.045A	200Ω	8 Henries	CK-1040	C-1002	T20C53*	C-2990	*Drill one new mounting hole.

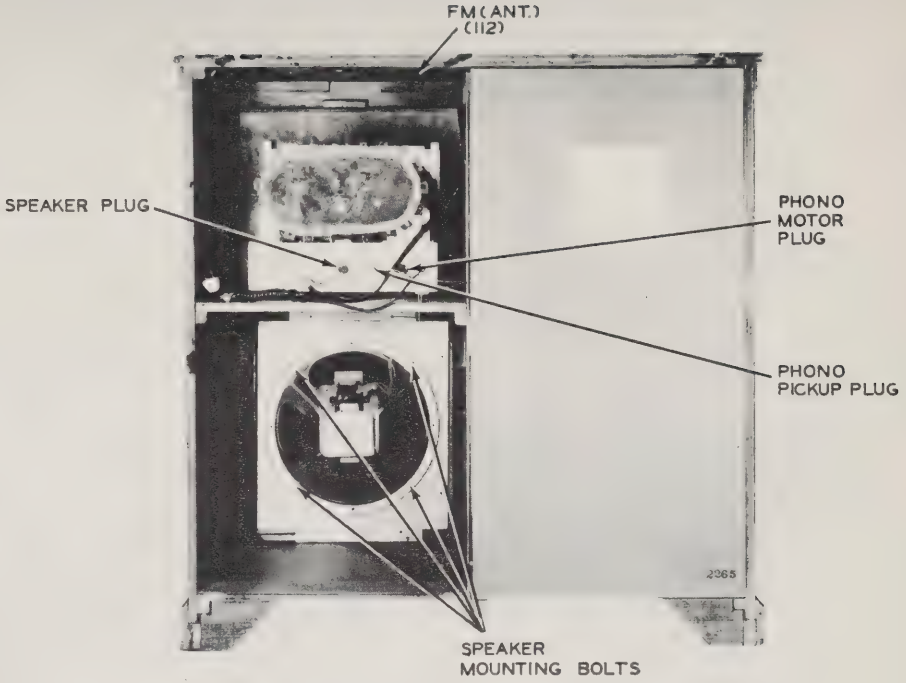
SET #29

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	MONITOR PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
107	117V AC @ .86A	560V CT @ .085A	4.9V AC @ 2.0A	6.2V AC @ 3.2A	TR-1061	P-6013†	T22R05	P-2953†

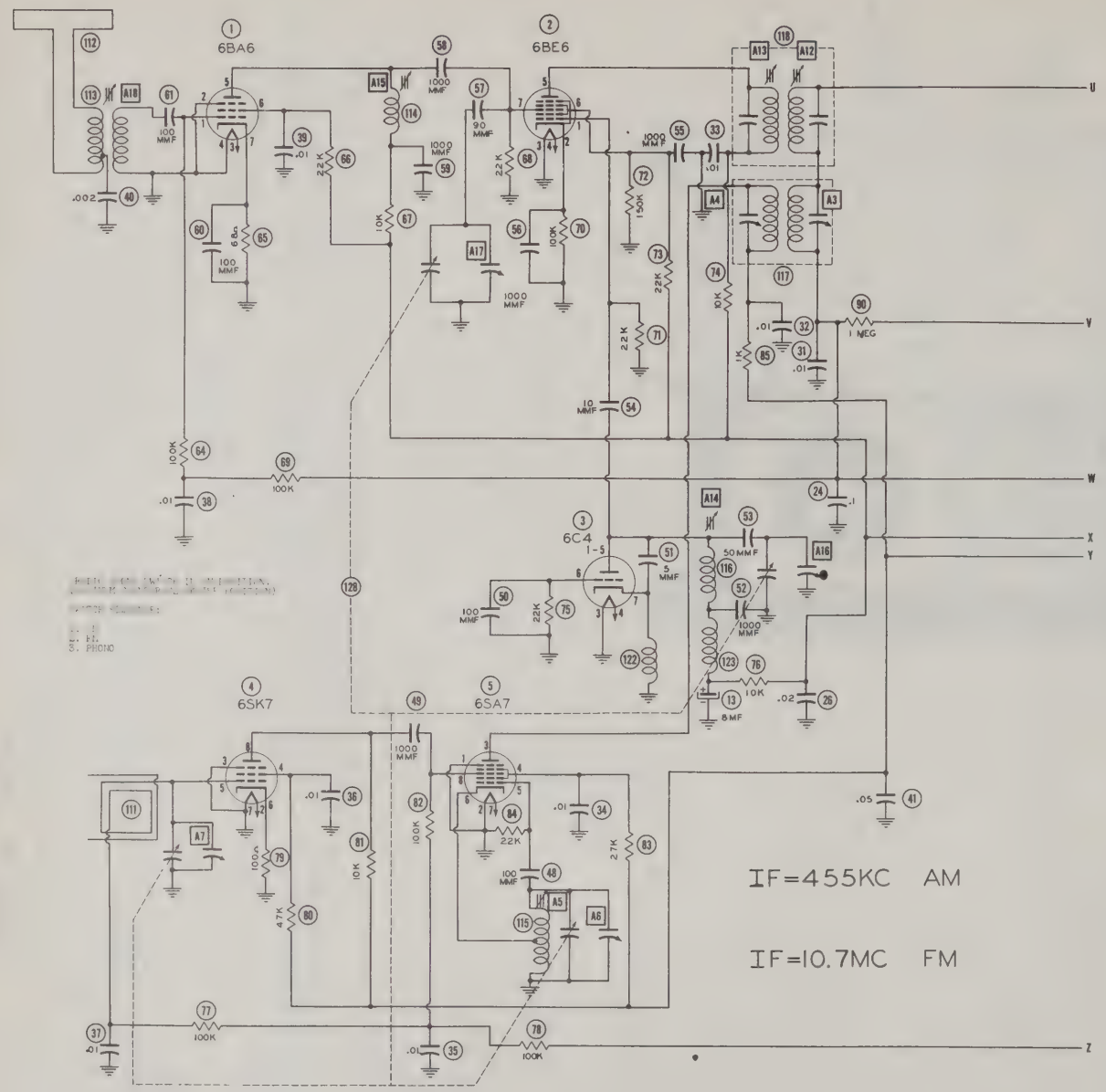
†Add series resistor to reduce plate voltage.

FOLDER #4719-15



DISASSEMBLY INSTRUCTIONS

1. Remove four push-on type control knobs.
2. Remove phono-motor plug from chassis.
3. Remove phono-pickup plug from chassis.
4. Remove speaker plug from chassis.
5. Remove FM dipole from chassis.
6. Remove four Phillips head screws holding chassis in cabinet. Remove chassis from cabinet.
7. Remove four hex nuts holding speaker in cabinet. Remove speaker from cabinet.



VOLTAGE

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
‡ 1	6BA6	-.3VDC	0V.	0V.	6.2VAC	140VDC	140VDC	1.4VDC	-
‡ 2	6BE6	-5VDC§	.9VDC	0V.	6.2VAC	230VDC	95VDC	0V.	-
‡ 3	6C4	125VDC	0V.	0V.	6.2VAC	120VDC	-4VDC§	0V.	-
4	6SK7	0V.	0V.	0V.	-.3VDC	1.3VDC	105VDC	6.2VAC	6.2VAC
5	6SA7	0V.	0V.	250VDC	90VDC	-9VDC§	0V.	6.2VAC	-.3VDC
6	6SK7	0V.	0V.	0V.	-.5VDC	1.2VDC	100VDC	6.2VAC	250VDC
‡ 7	6SH7	0V.	0V.	1.2VAC	0V.	1.2VDC	145VDC	6.2VAC	235VDC
‡ 8	6H6	0V.	0V.	-.2VDC	0V.	0V.	0V.	6.2VAC	0V.
9	6SQ7	0V.	-.7VDC	0V.	-.5VDC	-.4VDC	91VDC	6.2VAC	0V.
10	6V6GT	0V.	0V.	270VDC	270VDC	0V.	0V.	6.2VAC	13VDC
11	5Y3GT	0V	280VDC	0V.	280VAC	0V.	280VAC	0V.	280VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
‡ 1	6BA6	900KΩ	0Ω	0Ω	.1Ω	60KΩ	70KΩ	70KΩ	-
‡ 2	6BE6	22KΩ	100Ω	0Ω	.1Ω	60KΩ	70KΩ	22KΩ	-
‡ 3	6C4	60KΩ	INF.	0Ω	.1Ω	60KΩ	22KΩ	.1Ω	-
4	6SK7	0Ω	0Ω	0Ω	900KΩ	100Ω	100KΩ	.1Ω	60KΩ
5	6SA7	0Ω	0Ω	50KΩ	75KΩ	22KΩ	.7Ω	.1Ω	900KΩ
6	6SK7	0Ω	0Ω	0Ω	700KΩ	100Ω	20KΩ	.1Ω	60KΩ
‡ 7	6SH7	0Ω	0Ω	100Ω	.3Ω	100Ω	45KΩ	.1Ω	50KΩ
‡ 8	6H6	0Ω	0Ω	7KΩ	INF.	INF.	INF.	.1Ω	6KΩ
9	6SQ7	0Ω	10 Meg.	0Ω	700KΩ	500KΩ	520KΩ	.1Ω	0Ω
10	6V6GT	0Ω	0Ω	50KΩ	50KΩ	50KΩ	INF.	.1Ω	270Ω
11	5Y3GT	INF.	50KΩ	INF.	115Ω	INF.	125Ω	INF.	50KΩ

VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.
‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.
§TAKEN WITH VACUUM TUBE VOLTMETER.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

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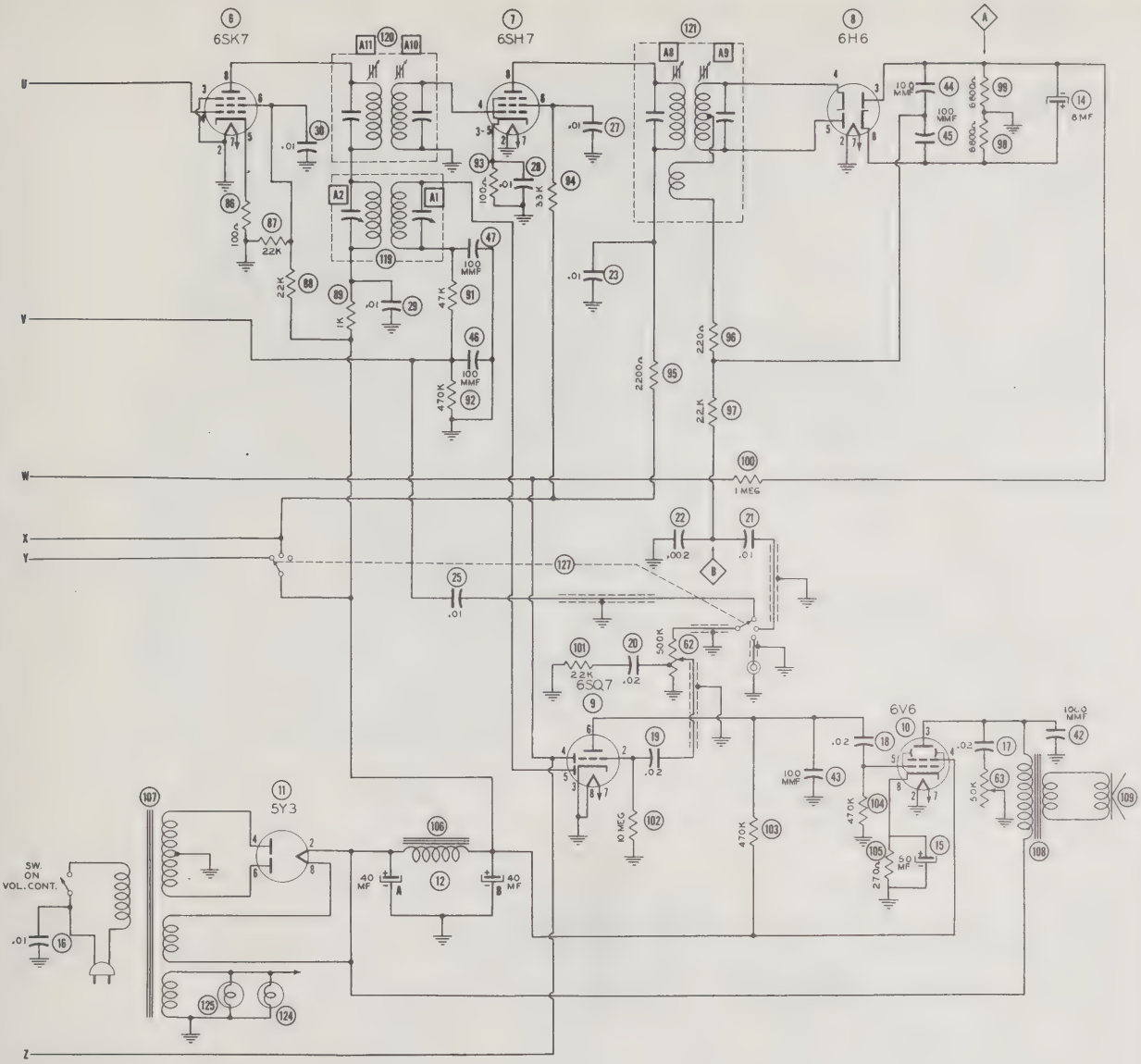
The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.



STAGE GAIN MEASUREMENTS		
ANT. TO RF GRID	15X	600KC
RF GRID TO CONV. GRID	15X	[illegible]
CONV. GAIN	55X	IN 600KC OUT [illegible]
1st IF TRANS.	.7X	455KC
IF TUBE	90X	455KC
2nd IF TRANS.	.65X	455KC
AUDIO	65X	400~
OUTPUT	20X	400~

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to reference dot at low freq. end of dial.

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.01 MFD.	High side to Pin 8 (grid) 6SA7. Low side to chassis.	455KC	BC (fully counter-clockwise)	Tuning cap. fully closed	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output
2	.01 MFD.	"	600KC	"	600KC	"	A5	" " " "
3	.01 MFD.	"	1600KC	"	1600KC	"	A6	Adjust for maximum output Repeat Steps 2 and 3 until no further improvement can be made.
4		Loop	1400KC	"	Tune for maximum output.	"	A7	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

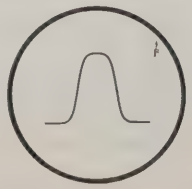
FM ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5	.002MFD	High side to Pin 4 (grid) of 6SH7. Low side to chassis.	10.7MC (unmodulated)	FM (center position)	Tuning cap. fully closed	DC probe to Point A. Common lead to chassis.	A8	Adjust for maximum deflection.
6	.002MFD	"	"	"	"	DC probe of VTVM to Point B. Common lead to chassis.	A9	Use a zero center scale VTVM if available. Adjust for zero deflection. At the correct setting the slightest change of A9 will cause either a negative or positive reading. A slow approach to zero indicates that A9 should be turned in the opposite direction.
7	.002MFD	High side to Pin 4 (grid) 6SK7 IF Tube #6. Low side to chassis.	"	"	"	DC probe to Point A. Common lead to chassis.	A10, A11	Adjust for maximum deflection.
8	.002MFD	High side to Pin 7 (grid) of 6BE6. Low side to chassis.	"	"	"	"	A12, A13	Adjust for maximum deflection. Repeat Steps 7 and 8.
9	DIRECT	Across FM Dipole terminals of ant. terminal strip.	88MC (unmodulated)	"	88MC	"	A14, A15	Adjust for maximum deflection.
10	DIRECT	"	108MC	"	108MC	"	A16, A17	Adjust for maximum deflection. Repeat Steps 9 and 10 until no further improvement can be made.
11	DIRECT	"	98MC	"	Tune for maximum output.	"	A18	Adjust for maximum deflection.

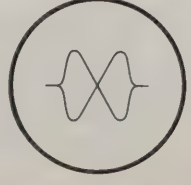
FM ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

(Frequency modulate signal with 60 ∿, 450KC sweep. Use 120 ∿ sawtooth for horizontal deflection).

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5	.002MFD	High side to Pin 4 (grid) 6SH7. Low side to chassis.	10.7MC (freq. modulated)	FM	Tuning cap. fully closed	Vertical input to Point A. Ground to chassis.	A8	Disconnect 8 MFD cap. from Point A. Adjust for maximum amplitude, symmetry and coincidence per Pattern A.
6	.002MFD	High side to Pin 4 (grid) 6SK7. Low side to chassis.	"	"	"	"	A10,A11	Adjust for maximum amplitude, symmetry and coincidence per Pattern A.
7	.002MFD	High side to Pin 7 (grid) 6BE6. Low side to chassis.	"	"	"	"	A12,A13	Adjust for maximum amplitude, symmetry and coincidence per Pattern A. Reconnect 8 MFD cap. to Point A.
8	.002MFD	High side to Pin 8 (grid) 6SA7. Low side to chassis.	"	"	"	Vertical input to Point B. Ground to chassis.	A9	Adjust for maximum straightness of crossover lines with crossover at center of Pattern per Pattern B.
9	DIRECT	Across FM dipole terminals of ant. terminal strip.	88MC (freq. modulated)	"	88MC	Vertical input to Point A. Ground to chassis.	A14	Disconnect 8 MFD. cap. from Point A. Adjust for coincidence of curves.
10	DIRECT	"	"	"	Tune for coincidence.	"	A15	Adjust for maximum amplitude.
11	DIRECT	"	108MC (freq. modulated)	"	108MC	"	A16	Adjust for coincidence.
12	DIRECT	"	"	"	Tune for coincidence.	"	A17	Adjust for maximum amplitude.
13	DIRECT		90MC (freq. modulated)	"	"	"	A18	Adjust for maximum amplitude. Reconnect 8 MFD capacitor to Point A.



PATTERN A



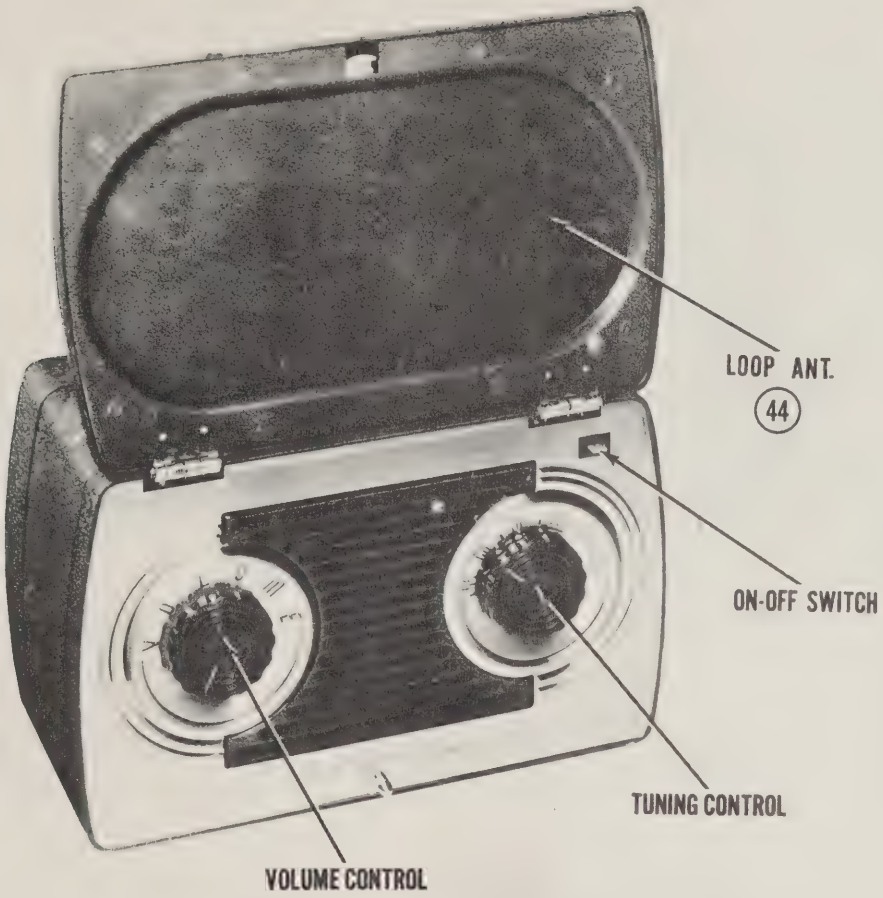
PATTERN B

PHOTOFACT* Folder

*TRADE MARK

MOTOROLA MODEL
5A7 (Ch. HS-62), 5A7A (Ch. HS-62A)
BATTERY OPERATED

MOTOROLA MODEL
5A7 (Ch. HS-62), 5A7A (Ch. HS-62A)
BATTERY OPERATED



MOTOROLA MODEL
5A7 (Ch. HS-62), 5A7A (Ch. HS-62A)
BATTERY OPERATED

MOTOROLA MODEL 5A7 (Ch. HS-62)

TRADE NAME	Motorola, Model 5A7 (Ch. HS-62), 5A7A (Ch. HS-62A)
MANUFACTURER	Motorola, Inc., 4545 Augusta Blvd., Chicago, Ill.
TYPE SET	Three Power Portable Superheterodyne with Loop Antenna
TUBES (FOUR)	Types, 1R5 Converter, 1U4 IF Amp., 1S5 Det.-AVC-AF, 3S4 Power Output.
POWER SUPPLY RATING	110-120 Volts AC-DC or 3 Volts DC "A" Supply and 67.5 Volts DC "B" Supply .120 Amp. @ 117 Volts AC or 160MA @ 3 Volts DC and 8 MA @ 67.5 Volts DC
TUNING RANGE—BROADCAST	535-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use battery power when available. If AC power is used, use an isolation transformer when available. If not, connect a .1 MFD capacitor in series with low side of the signal generator and B-. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver foradjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin 6 (grid) of 1R5. Low side to B-.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3	Adjust for maximum output. If AC power is used without an isolation transformer reduce dummy ant. to 200 MMF to reduce hum modulation.
2		Loop	1620KC	"	"	A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3		"	1400KC	Tune for maximum output.	"	A5	Adjust for maximum output.
4		"	600KC	"	"	A6	Rock tuning cap. and adjust for maximum output. Repeat Steps 2, 3 and 4 until no further improvement can be made.

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DATE 12/47 SET #29 FOLDER #4719-16

PARTS LIST AND DESCRIPTIONS

MOTOROLA MODELS 5A7 (Ch. HS-62), 5A7A (Ch. HS-62A)

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	1R5	1R5	7AT	
2	IF Amp.	1U4	1U4	6AR	
3	Det.-AVC-AF	1S5	1S5	6AU	
4	Power Output	3S4	3S4	7BA	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MOTOROLA PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
5A	40	150	23B470692		DY-403020-150	EL-224	AF844D	UP42215	■ Filter
B	15	150							▲ "
C	20	150							● "
6	80	25	23B470693	TC2501	M-100-25	UHC-102	PRS25-100	BRH251	Filament Bypass
7	.05	400	8A47606	TP426	S-4-05			DT4S5	Line Filter
8	.005	100	8A24966	MT115	TTR-1.5-006			ZY2D5	Output Plate Bypass
9	.02	100	8K471628	MT127	TTR-1.5-02			ZY1S2	AF Screen Bypass
10	.02	400	24A470628	TP423	S-4-02			DT4S2	Line Isolation †
11	.02	100	8K471628	MT127	TTR-1.5-02			ZY1S2	AVC Filter
12	.05	100	8A71213	MT135	TTR-1.5-05			ZY1S5	Fil. Bypass
13	.02	100	8K471628	MT127	TTR-1.5-02			ZY1S2	RF Bypass Pwr. Supply
14	.02	100	8K471628	MT127	TTR-1.5-02			ZY1S2	Osc. Screen Decoup.
15	4700	500	21B470567						Audio Coupling Cer.
16	100	500	21K77373	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	AF Plate Bypass Cer.
17	100	500	21K77373	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	Diode RF Filter Cer.
18	4700	500	21B470567						Audio Coupling Cer.
19	50	500	21K77373	MC225	MO.5-45	1FM-45	1468-00005	5W5Q5	IF Coupling Cer.

†Wind same number of turns of wire on replacement as on original.

CONTROLS

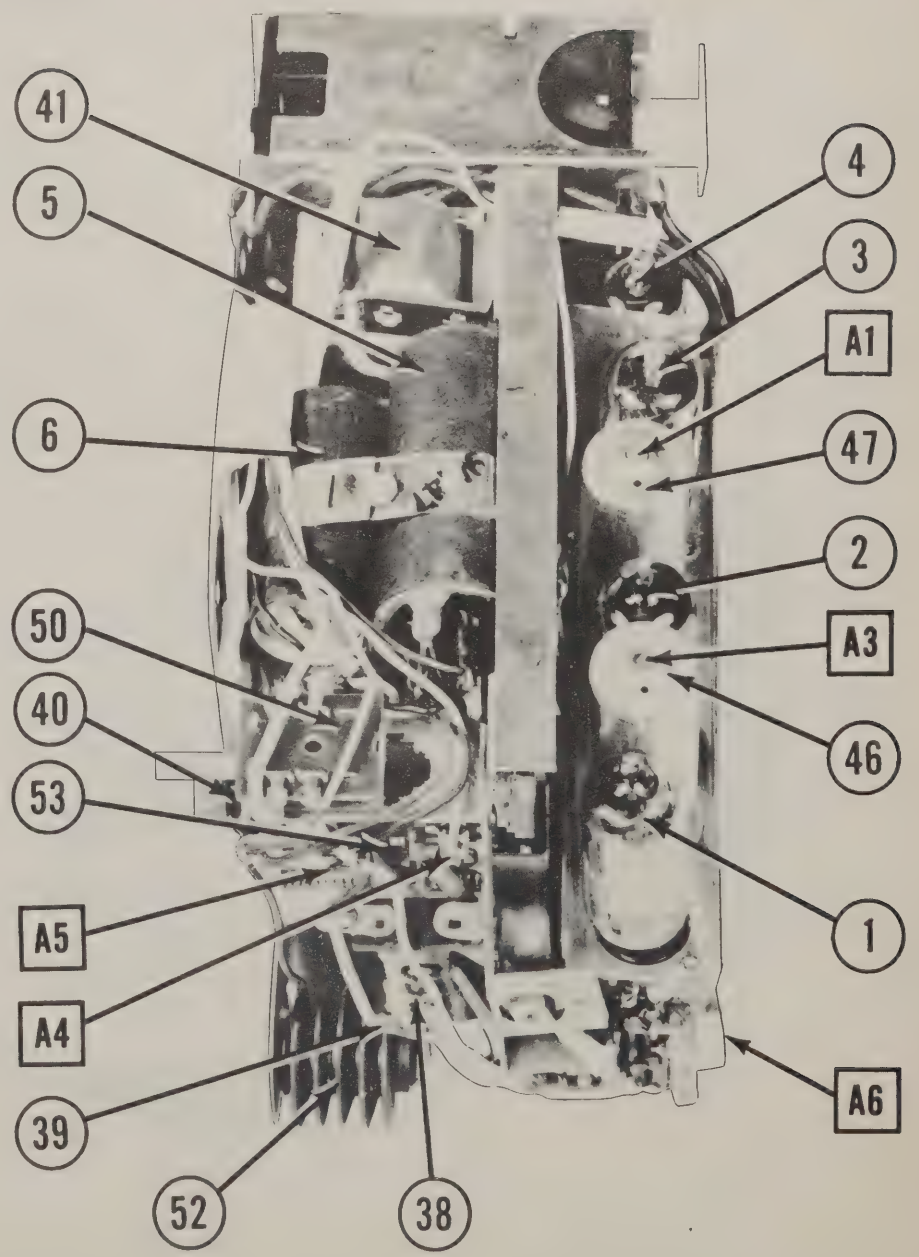
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
20	1 Meg.	½	18A471705				Volume Control

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	IRC PART No.	IDENTIFICATION CODES
21	4.7 Meg.	½	6R2122	BTS-4.7 Meg.	Yl.-Vi.-Grn. Converter Grid
22	100KΩ	½	6R6031	BTS-100K	Br.-Blk.-Yl. Osc. Grid
23	22KΩ	½	6R6397	BTS-22K	Red-Red-Or. Converter Screen Decoupling
24	10 Meg.	½	6R2109	BTS-10 Meg.	Br.-Blk.-Blue IF Grid
25	22Ω	½	6R6406	BW-½-22	Red-Red-Blk. Filament String
26	4.7Ω	½	17K77629	BTS-4.7	Yl.-Vi.-Gold Filament String
27	3.3 Meg.	½	6R2118	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
28	68KΩ	½	6R6001	BTS-68K	Blue-Gray-Or. Series Volume Control
29	10 Meg.	½	6R6406	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
30	39Ω	½	6R5554	BW-½-39Ω	Or.-White-Br. Filament String
31	1 Meg.	½	6R6004	BTS-1 Meg.	Br.-Blk.-Grn. AF Plate Load
32	4.7 Meg.	½	6R2122	BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Screen Dropping
33	3.3 Meg.	½	6R2118	BTS-3.3 Meg.	Or.-Or.-Grn. Output Grid
34	270Ω	½	6R6432	BW-½-270	Red-Vi.-Br. Filament String
35	680Ω	½	6R6040	BTS-680	Blue-Gray-Br. Filament String
36	220KΩ	½	6R6015	BTS-220K	Red-Red-Yl. Output Grid
37	820Ω	½	6R6269	BTS-820	Gray-Red-Br. Bias
38	150Ω	5	17A76986	AB-150	Surge Limiter
39	3300Ω	½	6R6036	BTS-3300	Or.-Or.-Red Filter
40A	1000Ω	10	17A470618	ABA-2000#	Filament Dropping
B	1000Ω				" "

#Set slider at 1000Ω from one end.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MOTOROLA PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
41	6800Ω	3.7Ω	365Ω	.5Ω	25B470662				

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			MOTOROLA PART No.	JENSEN PART No.		
	FIELD	VC IMP.				
42A	PM	3.7Ω	50B470620			
B			50B478023			Used in Model 5A7A only
	CONE DIA.	VC DIA.				
43	3-3/8"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	MOTOROLA PART No.	MEISSNER PART No.	
44A	Loop Ant.		2.7Ω	24B470903		Model 5A7
B	Loop Ant.			24K478008		Model 5A7A
45A	Osc. Coil	2.5Ω	10Ω	24A25548		Model 5A7
B	Osc. Coil			24A478022		Model 5A7A
46	Input IF	20Ω	22Ω	24B470894		
47	Output IF	44Ω	44Ω	24B470896		

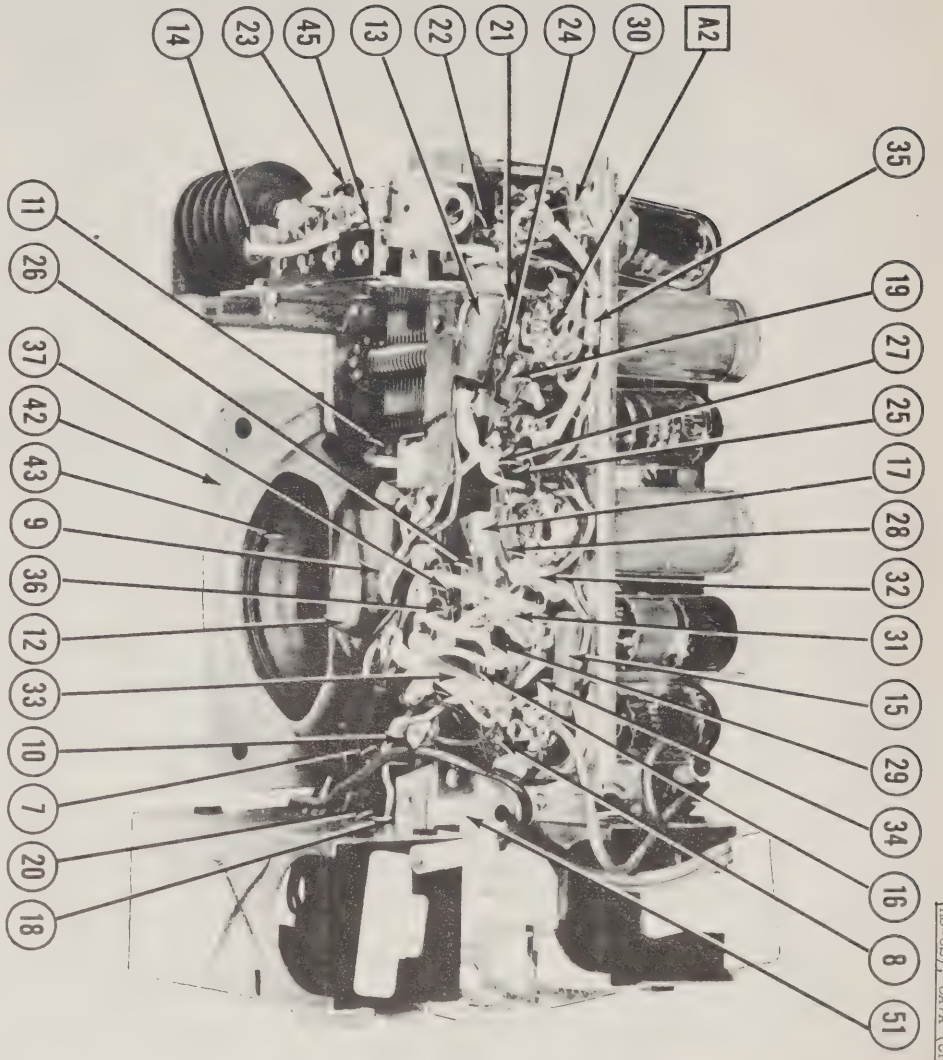
BATTERIES

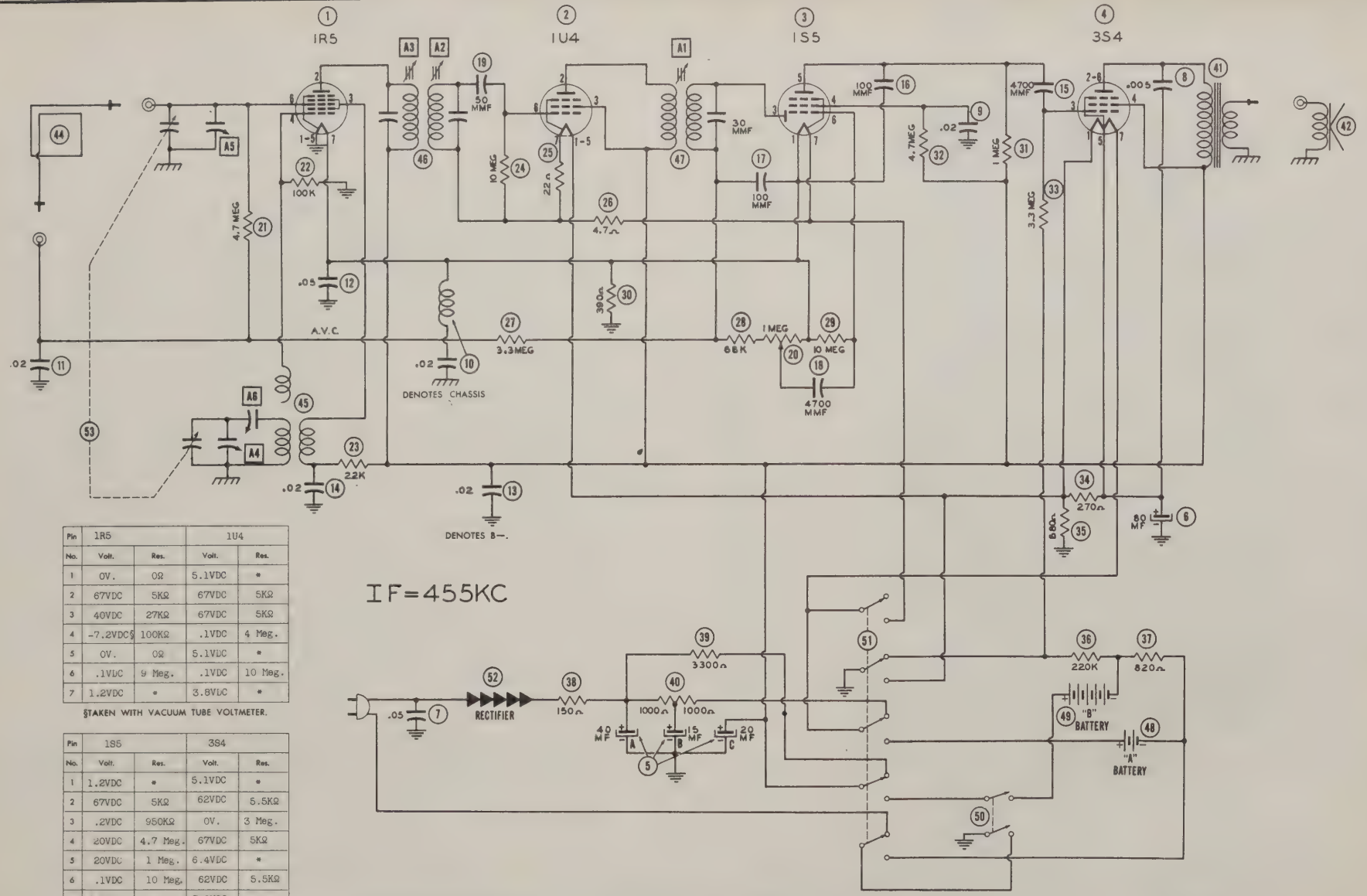
ITEM No.	VOLTAGE	MOTOROLA PART No.	EVEREADY			INSTALLATION NOTES
			"A"	"B"	"A-B"	
48	1½V "A"		#950			2 Used in Parallel
49	67½V "B"			#467		

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
50	On-Off Switch	40A470937	
51A	Switch	40A470619	AC-DC-Batt. (Slide)
B	"	40B471027	AC-DC-Batt. (Rotary)
52	Rectifier	48B478111	Selenium
53A	2 Gang Var. Cap.	19B470623	(17-372 MMF, 17-240 MMF) Model 5A7
B	" " " "	19B478016	Model 5A7-A
A6	Padder	20A471206	Osc. Adj. Early Model 5A7 only
		20K478061	" " Late Model 5A7 only

CHASSIS—BOTTOM VIEW





Pin	1R5		1U4	
No.	Volt.	Res.	Volt.	Res.
1	0V.	0Ω	5.1VDC	*
2	67VDC	5KΩ	67VDC	5KΩ
3	40VDC	27KΩ	67VDC	5KΩ
4	-7.2VDC§	100KΩ	.1VDC	4 Meg.
5	0V.	0Ω	5.1VDC	*
6	.1VDC	9 Meg.	.1VDC	10 Meg.
7	1.2VDC	*	3.8VDC	*

§TAKEN WITH VACUUM TUBE VOLTMETER.

Pin	1S5		3S4	
No.	Volt.	Res.	Volt.	Res.
1	1.2VDC	*	5.1VDC	*
2	67VDC	5KΩ	62VDC	5.5KΩ
3	.2VDC	950KΩ	0V.	3 Meg.
4	20VDC	4.7 Meg.	67VDC	5KΩ
5	20VDC	1 Meg.	6.4VDC	*
6	.1VDC	10 Meg.	62VDC	5.5KΩ
7	2.4VDC	*	7.8VDC	*

VOLTAGE AND RESISTANCE READINGS TAKEN IN AC-DC POSITION.
*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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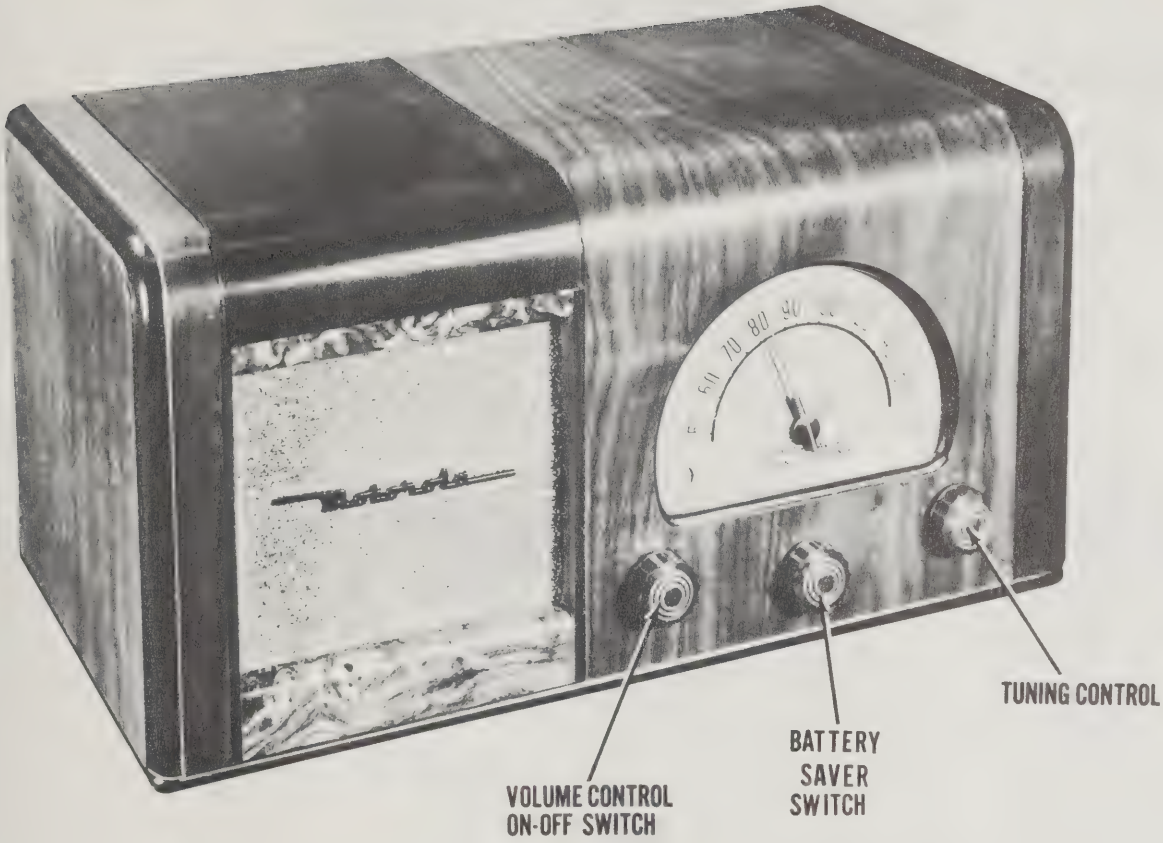
4719-16

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

MOTOROLA MODEL 47B11
(Ch. HS-72) BATTERY OPERATED



MOTOROLA MODEL 47B11
(Ch. HS-72) BATTERY OPERATED

MOTOROLA MODEL 47B11 (Ch. HS-72)

TRADE NAME	Motorola, Model 47B11 (Ch. HS-72)
MANUFACTURER	Motorola, Inc., 4545 Augusta Blvd., Chicago, Ill.
TYPE SET	Battery Operated Superheterodyne Receiver
TUBES (FOUR)	Types, 1A7GT Converter, 1N5GT IF Amp., 1H5GT Det.-AVC-AF, 3Q5GT Power Output.
POWER SUPPLY RATING	1.5 Volts "A" Supply and 90 Volts "B" Supply in Pack Form 250MA @ 1.5V DC and 12MA @ 90V DC
TUNING RANGE—BROADCAST	538-1720KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer parallel with base of dial. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to grid cap. 1A7. Low side to chassis.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output.
2	200MMFD	High side to ext. ant. lead. Low side to ext. ground lead.	1600KC	1600KC	"	A5	Adjust for maximum output. The trimmer opposite A5 is a factory adjustment and should be changed only if receiver will not calibrate with A5.
3	200MMFD	"	1400KC	Tune for maximum output.	"	A6	Adjust for maximum output.

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DATE 12/47 SET #29 FOLDER #4719-17

PARTS LIST AND DESCRIPTIONS

MOTOROLA MODEL 47B11 (Ch. HS-72)
BATTERY OPERATED

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	1A7GT	1A7GT	7Z	
2	IF Amp.	1N5GT	1N5GT	5Y	
3	Det.-AVC-AF	1H5GT	1H5GT	5Z	
4	Power Output	3Q5GT	3Q5GT	7AP	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MOTOROLA PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
5	10	150	23A14727	TC42	M-10-150	UT-121	PRS150-12	BR1215	Pwr. Supply Bypass
6	.5	200	8S9822	TP431	SDH-4-5	TC-5	484-.5	DT4P5	Fil. Bypass
7	.005	600	8S9813	TP408	S-6-005	TC-25	684-005	DT6D5	Output Plate Bypass
8	.006	600	8S9813	TP409	S-6-006	TC-26	684-006	DT6D6	Audio Coupling
9	.002	400	8S9824	TP405	S-6-002	TC-22	484-002	DT6D2	" "
10	.1	200	8S9806	TP428	S-4-1	TC-1	484-.1	DT4P1	RF Bypass Pwr. Supply
11	.01	400	8S9809	TP421	S-4-01	TC-11	484-01	DT4S1	IF Grid Filter
12	.01	400	8S9809	TP421	S-4-01	TC-11	484-01	DT4S1	Conv. Screen Bypass
13	.05	400	8S9816	TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter
14	100	500	21R6641	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	AF Plate Bypass
15	100	500	21R6641	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	Diode RF Filter

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
16A	1 Meg.	½	18K77615	MK402	D13-137	AM-63-Z	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 16A per instructions
C	Switch		" "	M27	42	SW-A2	" " " " "

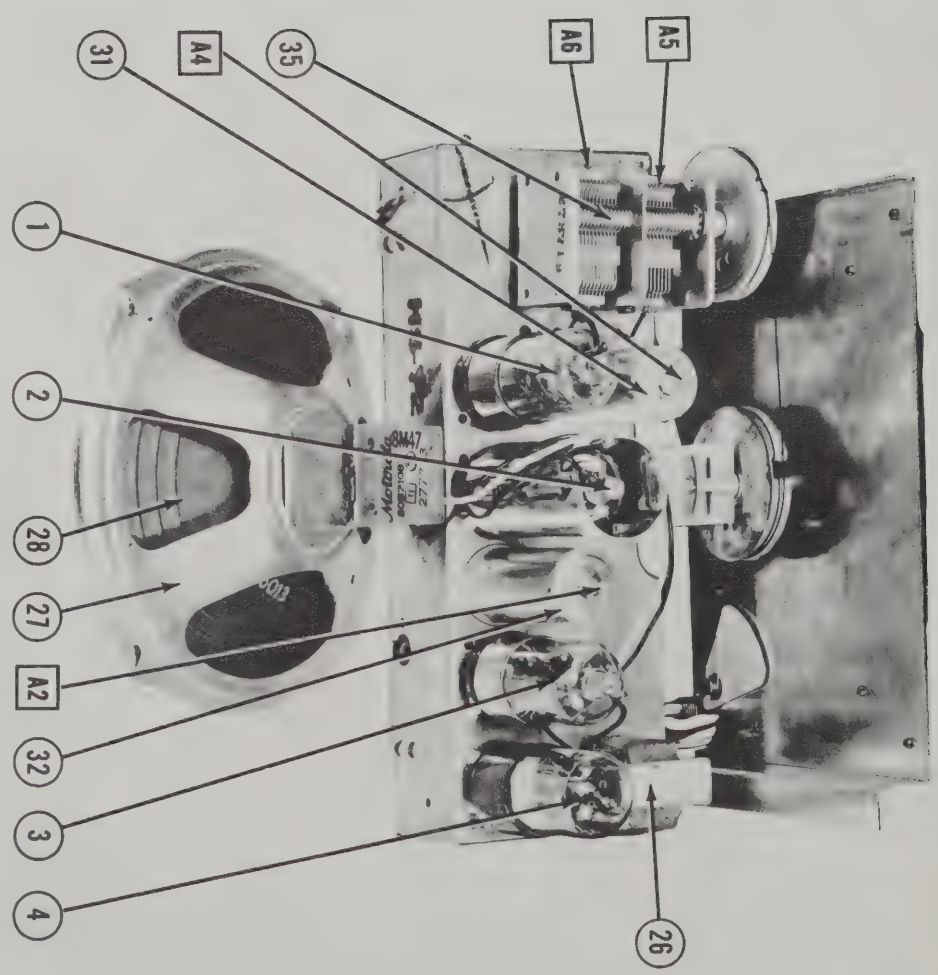
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	IRC PART No.	IDENTIFICATION CODES
17	2.2 Meg.	½	6R3927	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
18	220KΩ	½	6R6015	BTS-220K	Red-Red-Yl. Oscillator Grid
19	47KΩ	½	6R6056	BTS-47K	Yl.-Vi.-Or. Converter Screen Dropping
20	2.2 Meg.	½	6R3927	BTS-2.2 Meg.	Red-Red-Grn. IF Grid
21	8.2 Meg.	½	6R5585	BTS-8.2 Meg.	Gray-Red-Grn. AF Grid
22	1 Meg.	½	6R6004	BTS-1 Meg.	Br.-Blk.-Grn. AF Plate Load
23	1 Meg.	½	6R6004	BTS-1 Meg.	Br.-Blk.-Grn. Output Grid
24	390Ω	½	6R5554	BW-½-390	Or.-White-Br. Bias
25	390Ω	½	6R5554	BW-½-390	Or.-White-Br. Battery Saver

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: MOTOROLA PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
26A	13000Ω	4.0Ω	720Ω	.7Ω	25B76952	A-3879*	T22847*	A-2932*	*Drill new mounting holes.
B					25B76987				Alternate Transformer

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	FIELD	VC IMP.	MOTOROLA PART No.	JENSEN PART No.		
27	PM	4.0Ω	50B71087	ST-110 Mod. P6-V		
	CONE DIA.	VC DIA.				
28	6¼"	½"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

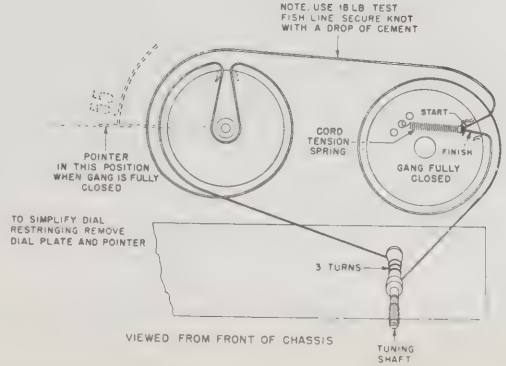
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	MOTOROLA PART No.	MEISSNER PART No.	
29	Ant. Coil	27Ω	2Ω	24A3042	14-1026	
30	Osc. Coil	2.5Ω	8Ω	24A27349	14-1040†	†Add 50MMFD from grid to high side tuning cap.
31	Input IF	17Ω	17Ω	24B77677	16-6666	
32	Output IF	13Ω	15Ω	24B70531	16-6667	

BATTERIES

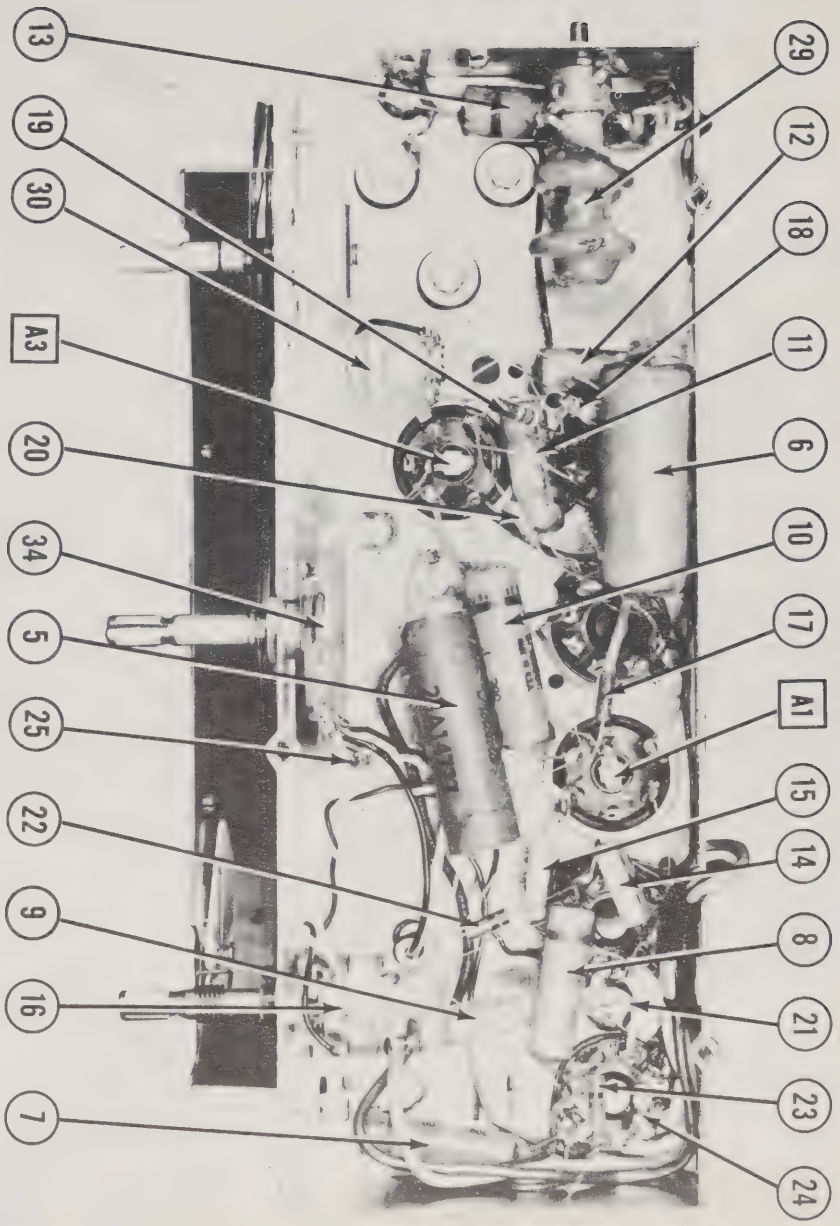
ITEM No.	VOLTAGE	MOTOROLA PART No.	EVEREADY			INSTALLATION NOTES
			"A"	"B"	"A-B"	
33	1½V "A" 90V "B"				#758	

MISCELLANEOUS

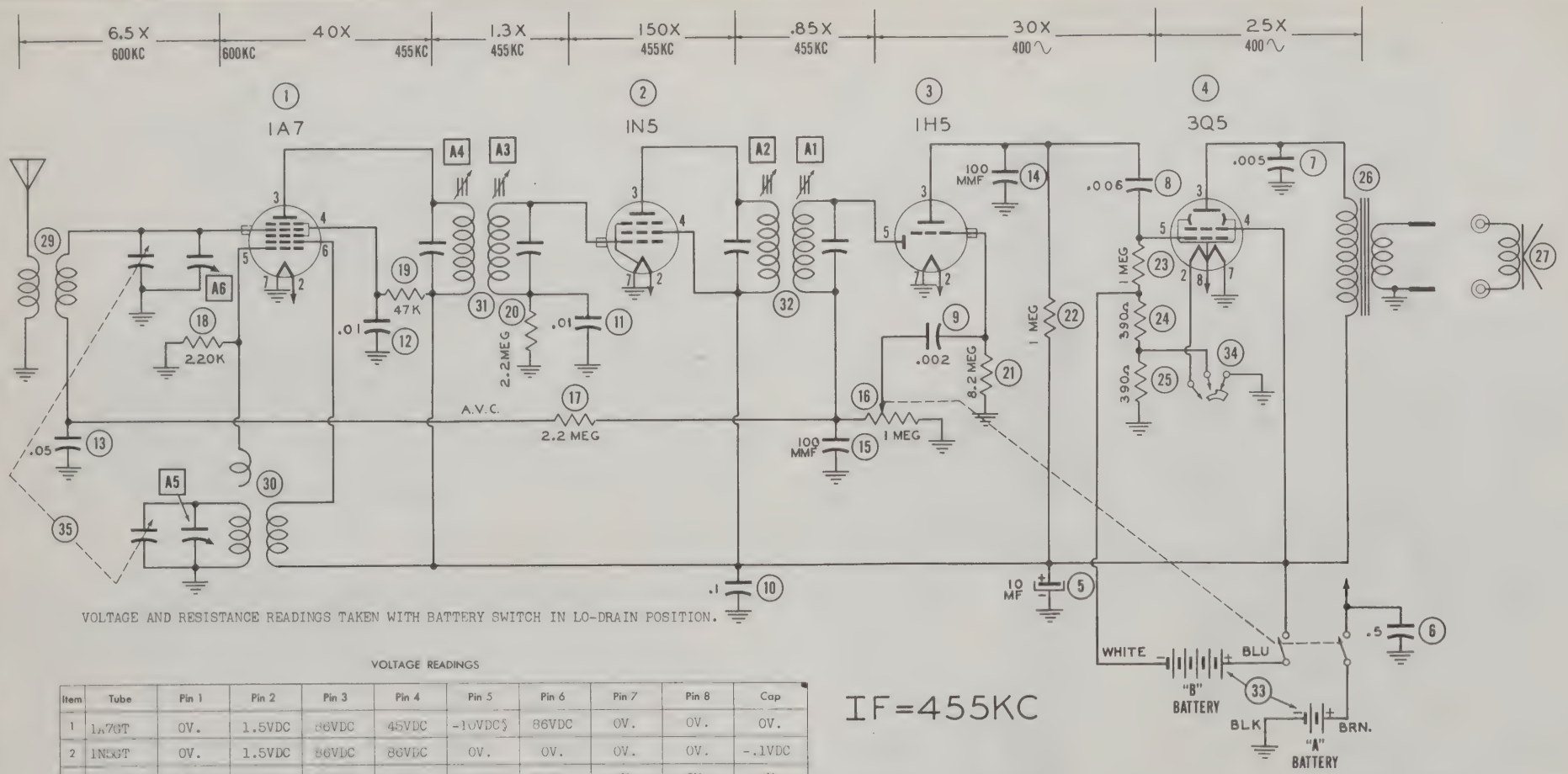
ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
34	Switch	40K77620	Battery Saver
35	2 Gang Var. Cap.	1X77683	(28-460MMF, 26-192MMF)
	Pointer	52A77632	
	Dial Scale	34B77621	
	Dial	61B77625	Crystal


NOTE: USE 18 LB. TEST FISH LINE SECURE KNOT WITH A DROP OF CEMENT
START
FINISH
CORD TENSION SPRING
GANG FULLY CLOSED
POINTER IN THIS POSITION WHEN GANG IS FULLY CLOSED
TO SIMPLIFY DIAL RESTRINGING REMOVE DIAL PLATE AND POINTER
3 TURNS
VIEWED FROM FRONT OF CHASSIS
TUNING SHAFT

CHASSIS—BOTTOM VIEW



MOTOROLA MODEL 47B11 (Ch. HS-72)
BATTERY OPERATED



VOLTAGE AND RESISTANCE READINGS TAKEN WITH BATTERY SWITCH IN LO-DRAIN POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	1A7GT	0V.	1.5VDC	86VDC	45VDC	-10VDC§	86VDC	0V.	0V.	0V.
2	1N5GT	0V.	1.5VDC	86VDC	86VDC	0V.	0V.	0V.	0V.	-.1VDC
3	1H5GT	0V.	1.5VDC	57VDC	0V.	-.4VDC	INF.	0V.	0V.	0V.
4	3Q5GT	-6VDC	1.5VDC	84VDC	86VDC	-1.6VDC	-3VDC	0V.	1.5VDC	-

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	1A7GT	0Ω	*	70KΩ	120KΩ	200KΩ	70KΩ	0Ω	INF.	3.5 Meg.
2	1N5GT	0Ω	*	70KΩ	70KΩ	INF.	.5Ω	0Ω	3.5 Meg.	2.5 Meg.
3	1H5GT	0Ω	*	1 Meg.	INF.	1 Meg.	INF.	0Ω	3 Meg.	3 Meg.
4	3Q5GT	800Ω	*	70KΩ	70KΩ	1 Meg.	400Ω	0Ω	*	-

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

IF=455KC

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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4719-17

The above measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative by shorting to chassis.

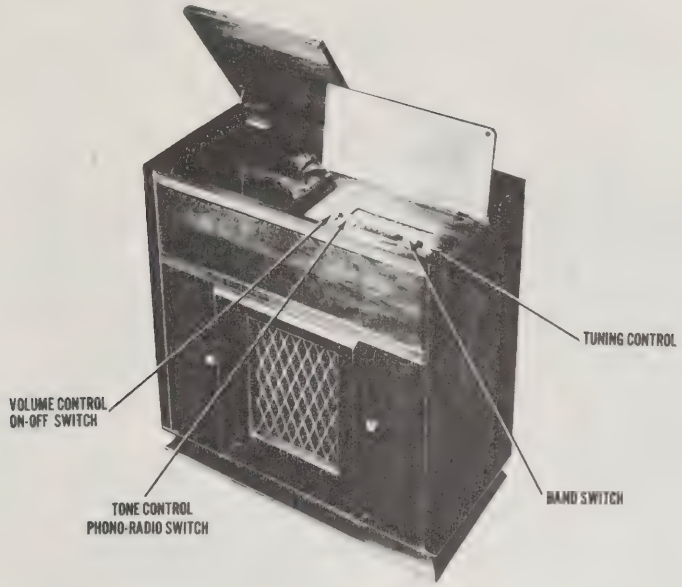
1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
5 - Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

*TRADE MARK

MOTOROLA MODELS 75F31 (Ch. HS-36), 75F31A, 75F31B (Ch. HS-36A), 76F31 (HS-98)

MOTOROLA MODELS 75F31 (Ch. HS-36), 75F31A, 75F31B (Ch. HS-36A), 76F31 (HS-98)



MOTOROLA MODEL 75F31 (Ch. HS-36)

TRADE NAME	Motorola, Models 75F31 (Ch. HS-36), 75F31A, 75F31B (Ch. HS-36A), 76F31 (Ch. HS-98)
MANUFACTURER	Motorola, Inc., 4545 Augusta Blvd., Chicago, Ill.
TYPE SET	AC Operated Combination Phono-Radio, FM - 2 Band AM Superheterodyne with Loop Antenna
TUBES	(SEVEN) Types, 7F8 1st & 2nd FM Converter, 7Q7 BC-SW Converter, 6SG7 1st IF Amp., 6SG7 or 7W7 2nd FM IF Amp., 6S8GT Det.-AVC-AF, 6K6GT or 6Y6GT Power Output, 5Y3GT Rectifier.
POWER SUPPLY	110 - 120 Volts AC RATING .590 Amp. @ 117 Volts AC
RATING RANGE -	BROADCAST 535-1620KC SHORT WAVE 5.6-12.2MC FM 88-108MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low freq. end of dial.

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

Use a 30% amplitude modulated signal throughout entire alignment.

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin 4 (grid) 7Q7. Low side to chassis.	455KC	BC (1st position clock-wise)	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output
2	.1 MFD	"	1400KC	"	1400KC	"	A5	" " " "
3		Loop	"	"	Tune for maximum output.	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4	.1 MFD	High side to Pin 4 (grid) 7Q7. Low side to chassis.	11.5MC	SW (fully counter-clock-wise)	11.5MC	"	A7	Adjust for maximum output. Check for image by tuning sig. gen. to approximately 12.4MC. If signal is not heard re-tune sig. gen. to 11.5MC and loosen A7 to next peak. Adjust for maximum output.
5	50MMFD.	High side to ext. ant. lead. Low side to chassis.	"	"	Tune for maximum output.	"	A8	Disconnect BC loop. Rock tuning cap. and adjust for maximum output.

FOR FM ALIGNMENT SEE LAST PAGE.

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

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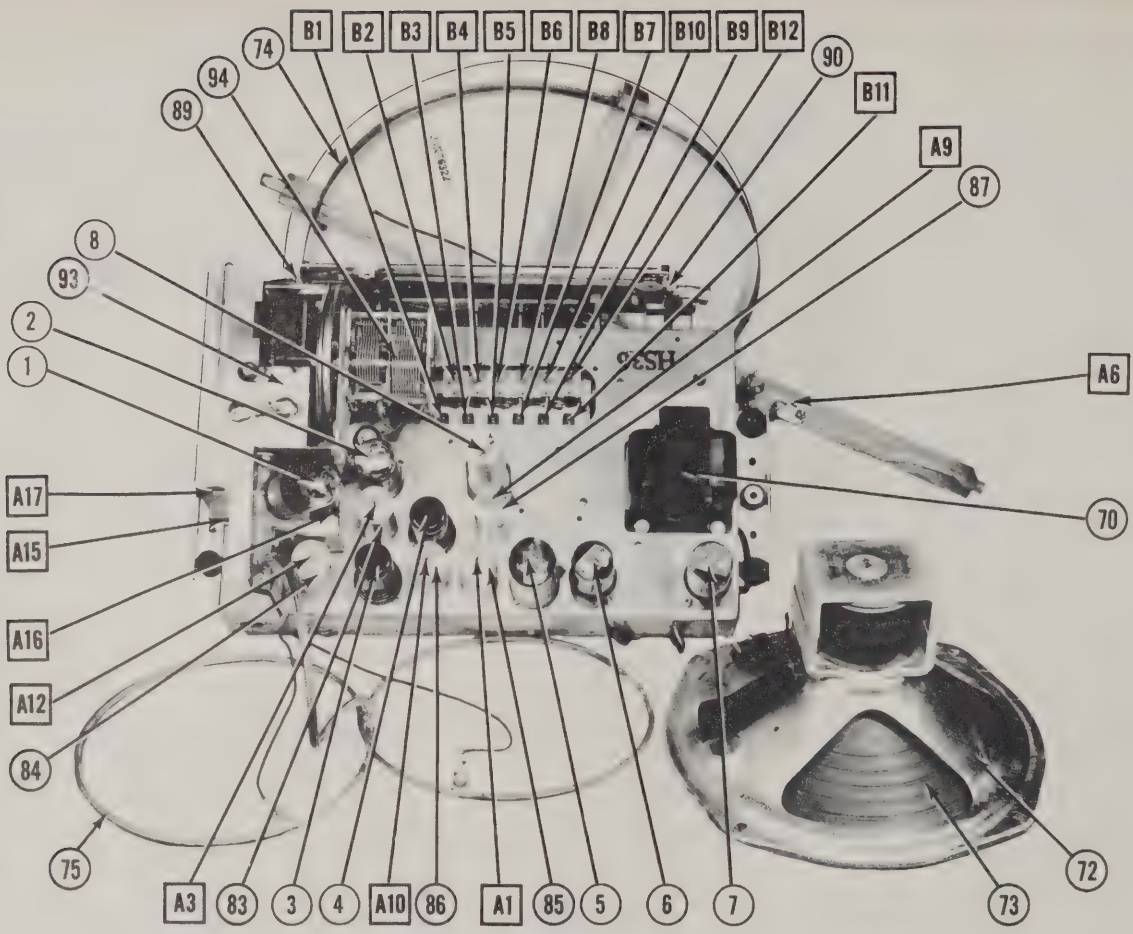
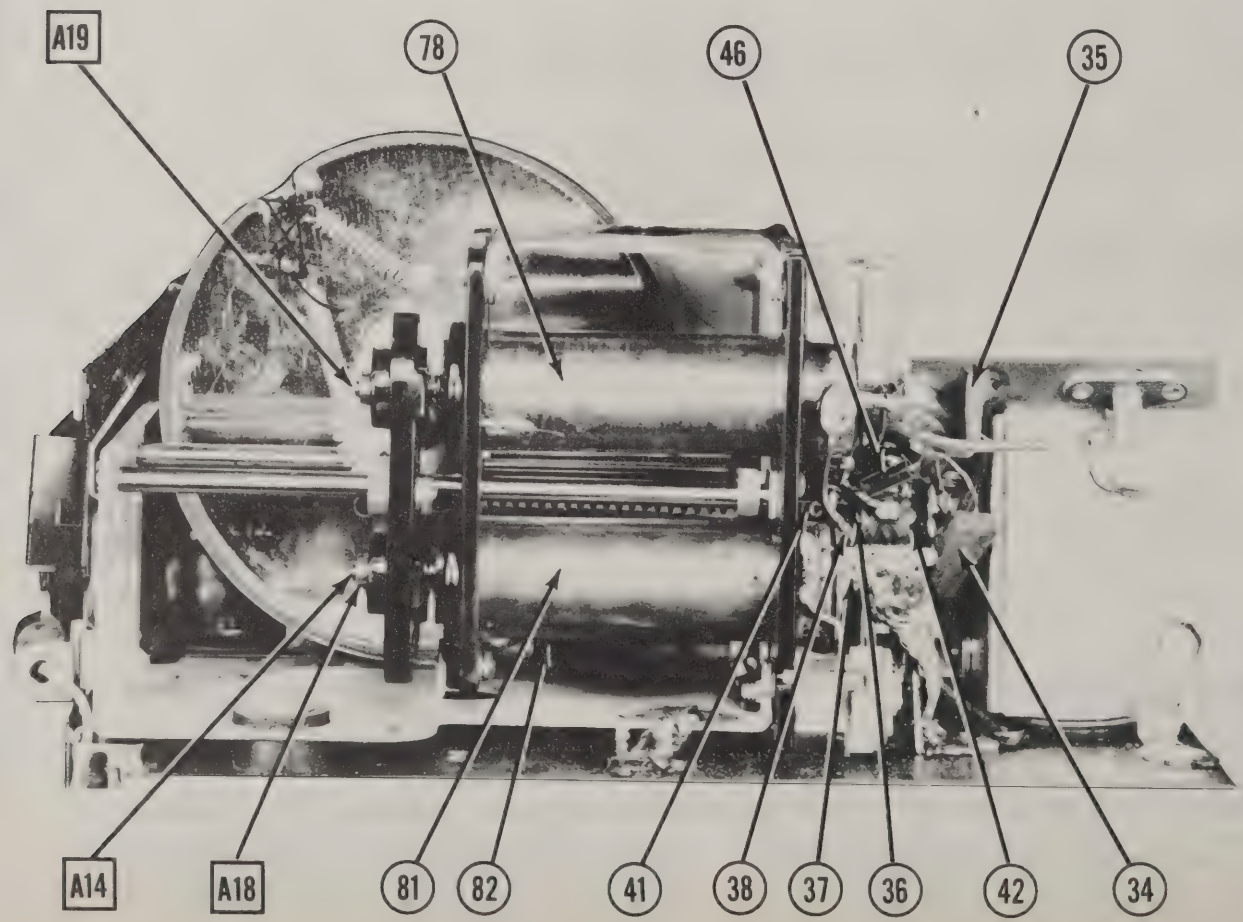
DATE 12/47 SET #29 FOLDER #4719-18


B1
B2
B3
B4
B5
B6
B8
B7
B10
B9
B12
74
94
89
90
B11
A9
87
8
93
2
1
A6
A17
70
A15
A16
A12
84
75
72
73
A3
83
3
4
A10
86
A1
85
5
6
7


A19
78
46
35
A14
A18
81
82
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37
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67
61
14
18
71
11
68
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64
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A2
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57
A11
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17
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21
20
43
A13
52
44
23
22
45
88
A7
80
A4
A5
48
30
50
79
91
32
31
49
A8
77
33
16
15
A20
92
25
40
29
A
66
65
13
39

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	1st & 2nd FM Converter	7F8	7F8	8BW	
2	BC & SW Conv.	7Q7	7Q7	8AL	
3	1st IF Amp.	6SG7	6SG7	8BK	
4A	2nd IF Amp.	6SG7	6SG7	8BK	
B	2nd FM IF Amp.	7W7	7W7	8BJ	
5	Det.-AVC-AF	6S8GT	6S8GT	8CB	
6A	Power Output	6K6GT	6K6GT	7S	
B	" "	6V6GT	6V6GT	7AC	
7	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA: MOTOROLA PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
8A	30	350	23A27718	FP331	DY-311	EL-323	AF44J4A	UP6BJ37	◘ Filter
B	30	300							▲ "
C	20	25						BR202A	Bias Filter
9	10	100	23K77635	TC42	M-10-150	UT-121	PRS150-10	BR1215	Stabilizing Capacitor
10	.005	600	8S9813	TP408	S-6-005	TC-25	684-005	DT6D5	Output Plate Bypass
11	.05	400	8S9816	TP426	S-4-05	TC-15	484-05	DT4S5	Audio Coupling
12	.005	600	8S9813	TP408	S-6-005	TC-25	684-005	DT6D5	Tone Comp..
13	.005	600	8S9813	TP408	S-6-005	TC-25	684-005	DT6D5	" "
14	.005	600	8S9813	TP408	S-6-005	TC-25	684-005	DT6D5	Audio Coupling
15	.05	400	8S9816	TP426	S-4-05	TC-15	484-05	DT4S5	2nd IF Plate Decoup.
16	.05	400	8S9816	TP426	S-4-05	TC-15	484-05	DT4S5	2nd IF Screen Bypass
17	.01	100	8S9801	TP421	S-4-01	TC-11	484-01	DT4S1	AVC Filter
18	.05	400	8S9816	TP426	S-4-05	TC-15	484-05	DT4S5	RF Bypass Pwr. Supply
19	.01	400	8S9809	TP421	S-4-01	TC-11	484-01	DT4S1	1st IF Plate Decoup.
20	.05	400	8S9816	TP426	S-4-05	TC-15	484-05	DT4S5	1st IF Screen Bypass
21	.01	100	8S9801	TP421	S-4-01	TC-11	484-01	DT4S1	AVC Filter
22	.05	400	8S9816	TP426	S-4-05	TC-15	484-05	DT4S5	AM Conv. Screen Bypass
23	.05	400	8S9816	TP426	S-4-05	TC-15	484-05	DT4S5	FM Conv. Plate Decoup.
24	500	500	21R6639	MC245	MO.5-35	1FM-35	1468-0005	5W5T5	AF Plate Bypass
25A	50		21R6642	MC225	MO.5-45	1FM-45	1468-00005	5W5Q5	Ratio Det. Load-See Note 1
B	4000		21R6661	MC463	MW.5-24	1FM-24	1467-004	1D5D4	" " " " " 2
26A	50		21R6642	MC225	MO.5-45	1FM-45	1468-00005	5W5Q5	" " " " " 1
B	4000		21R6661	MC463	MW.5-24	1FM-24	1467-004	1D5D4	" " " " " 2
27	500	500	21R6639	MC245	MO.5-35	1FM-35	1468-0005	5W5T5	Balancing Capacitor-Note 1
28	1000	500	21R2724	MC455	MO.3-21	1FM-21	1468-001	1W5D1	Deemphasis - See Note 1
29	100	500	21R2724	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	Tone Compensation
30	50	500	21R6642	MC225	MO.5-45	1FM-45	1468-00005	5W5Q5	AM Osc. Grid
31	50	500	21R6642	MC225	MO.5-45	1FM-45	1468-00005	5W5Q5	RF Coupling
32	535		21A28020						Fixed Trimmer PB
33	1000	500	21R2724	MC455	MO.3-21	1FM-21	1468-001	1W5D1	Fixed Pad
34	500	500	21R2730	MC245	MO.5-35	1FM-35	1468-0005	5W5T5	RF Coupling
35	250	500	21A112247	MC240	MO.5-325	1FM-325	1468-00025	5W5T25	Fil. Bypass
36	250	500	21R2729	MC240	MO.5-325	1FM-325	1468-00025	5W5T25	Osc. Coupling
37	16	500	21A76320						Fixed Trimmer
38	250	500	21A112247	MC240	MO.5-325	1FM-325	1468-00025	5W5T25	Fixed Pad
95	500	500	21R6639	MC245	MO.5-35	1FM-35	1468-0005	5W5T5	Diode RF Filter

Note 1 - Used in chassis HS-36A & HS-98 only. Note 2 - Used in chassis HS-36 only.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA: MOTOROLA PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
39A	1 Meg.	½	18K74891	TM240	D13-137X	AT-109	Volume Control
B	Shaft		Not Req.	SS25	E	KSS-3	Attach to 39A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "
40	1 Meg.	½	18A28062				Tone Control & Radio-Phono Switch

PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: MEISSNER PART No.	
74A	BC LoopAnt.	.1Ω	1.5Ω	24K76322		Model 75F31, 75F31A, 75F31B
B	BC Loopant.			24K71598		Model 76F31
75	FM Loopant.		0Ω	1X76326		
76	SW Ant.					
77	SW Ant.Coil	3.5Ω	.1Ω	24A74822	14-1044	
78	FM Ant.Coil		0Ω			Items 78, 81, 82 are slug tuned, ganged
79	BC Osc.Coil		6Ω	24A74821	14-1040	together and part of FM tuning assembly.
80	SW Osc.Coil		.1Ω	24A74820	14-1046	
81	FM Osc.Coil		0Ω			
82	FM Var. If Coil		0Ω			
83	AM InputIF	13Ω	14Ω	24B75487		
84	FM " "	2.3Ω	2.5Ω	24B75481		
85	AM OutputIF	15Ω	15Ω	24B70537		
86	FM OutputIF	1Ω	1Ω	24B75473		
87	FM Discrim.	3Ω	3Ω	24B75456		
88	RF Choke		.1Ω	24A74989		

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: MOTOROLA PART No.		INSTALLATION NOTES
89	Bayonet	6-8	0.15	Brown	65X11854		Type 47
90	"	"	"	"	65X11854		" "

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
91	Switch	40B75236	Band (4 Position)
92	Pushbutton Tuner	1X76440	Complete Assembly
93	FM Tuner Assy.		
94	2 Gang Var. Cap.	19B72560	(17-523MMF, 12-244MMF)
A5	Trimmer	20A75234	BC Osc. Adj.
A6	"	20A71226	BC Ant. Adj.
A7	"	20A71141	SW Osc. Adj.
A8	"	20A71141	SW Ant. Adj.
A15	"	20K74940	FM Osc. Adj.
A16	"	20K74940	FM Var. IF Adj.
A17	"	20A74939	FM Ant. Adj.
	Dial Pointer	52B74418	
	Dial Scale	34B74422	

PUSHBUTTON ADJUSTMENTS

Tuning ranges of the buttons from right to left are 900-1600KC, 750-1350KC, 650-1200KC, 650-1200KC, 600-1050KC, 540-930KC.

Make a list of stations to be set up ranging from high to low frequency making certain that each station falls within the range of the button to be set up.

1. Turn on receiver and allow it to warm up for about 15 minutes.
2. Turn bandswitch to pushbutton.
3. Push in first button on right and adjust B1 to tune in station.
4. Adjust B2 for maximum volume.
5. To set up the remaining buttons follow the same procedure outlined above adjusting B3, B5, B7, B9, B11 to tune in stations and B4, B6, B8, B10, B12 for maximum volume.

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	MOTOROLA PART No.	IRC PART No.	
41	10 Meg.	½	6R2109	BTS-10 Meg.	Br.-Blk.-Blue 1st FM Converter Grid
42	15KΩ	1	6R6013	BTA-15K	Br.-Grn.-Or. 1st FM Converter Plate Load
43	33KΩ	½	6R6410	BTS-33K	Or.-Or.-Or. Bleeder
44	15KΩ	½	6R6477	BTS-15K	Br.-Grn.-Or. Decoupling
45	22KΩ	1	6R6313	BTA-22K	Red-Red-Or. Decoupling
46	1.5 Meg.	½	6R3966	BTS-1.5 Meg.	Br.-Grn.-Grn. 2nd FM Converter Grid
47	2.2 Meg.	½	6R6433	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
48	220Ω	½	6R6270	BW-½-220	Red-Red-Br. Parasitic Suppressor
49	22KΩ	½	6R6397	BTS-22K	Red-Red-Or. AM Oscillator Grid
50	470KΩ	½	6R6032	BTS-470K	Yl.-Vi.-Yl. AM Converter Grid
51	12KΩ	3	6R3967	AB-12K	Br.-Red-Or. AM Converter Screen Dropping
52	39KΩ	1	6R6588	BTA-39K	Or.-White-Or. 1st IF Screen Dropping
53	1000Ω	½	6R6301	BTS-1000	Br.-Blk.-Red 1st IF Plate Decoupling
54	47KΩ	½	6R6056	BTS-47K	Yl.-Vi.-Or. Diode RF Filter
55	1 Meg.	½	6R6004	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
56	22KΩ	½	6R6397	BTS-22K	Red-Red-Or. AVC Network
57	150KΩ	½	6R6398	BTS-150K	Br.-Grn.-Yl. 2nd IF Transformer Shunt
58	330Ω	½	6R6010	BW-½-330	Or.-Or.-Br. Balancing Resistor-See Note 1
59	22KΩ	½	6R6028	BTS-22K	Red-Red-Or. De-emphasis - See Note 1
60	22KΩ	½	6R6028	BTS-22K	Red-Red-Or. Ratio Detector Load
61	10KΩ	½	6R6320	BTS-10K	Br.-Blk.-Or. " " "
62	4.7 Meg.	½	6R6446	BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Grid
63	68KΩ	½	6R6001	BTS-68K	Blue-Gray-Or. AF Plate Load
64	470KΩ	½	6R6032	BTS-470K	Yl.-Vi.-Yl. Output Grid
65	33KΩ	½	6R6410	BTS-33K	Or.-Or.-Or. Tone Compensation
66	1 Meg.	½	6R6004	BTS-1 Meg.	Br.-Blk.-Grn. Series Phono
67	10Ω	½	6R5621	BW-½-10	Br.-Blk.-Blk. Bias
68	270Ω	1	6R6035	BW-1-270	Red-Vi.-Br. "
69	2.7Ω	½	17K77634	BW-½-2.7	Red-Vi.-Gold Series Pilot Light-See Note 2

NOTE 1 - Not used in Model HS-36 NOTE 2 - Not used in all models.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	MOTOROLA PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
70	117V AC @ .59A	600V CT @ .063A	5.0V AC @ 2.0A	6.3V AC @ 2.4A	25B70598	P-4078*	T22R31*	P-3151*

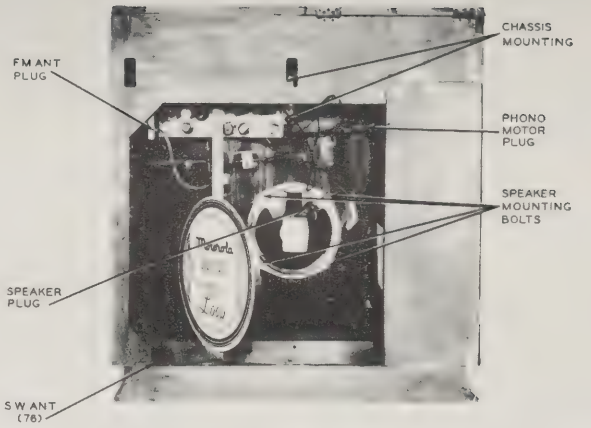
*Drill new mounting holes.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MOTOROLA PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
71	4100Ω	3.5Ω	400Ω	.4Ω	25B75463	A-3823	T22S87	A-2901	

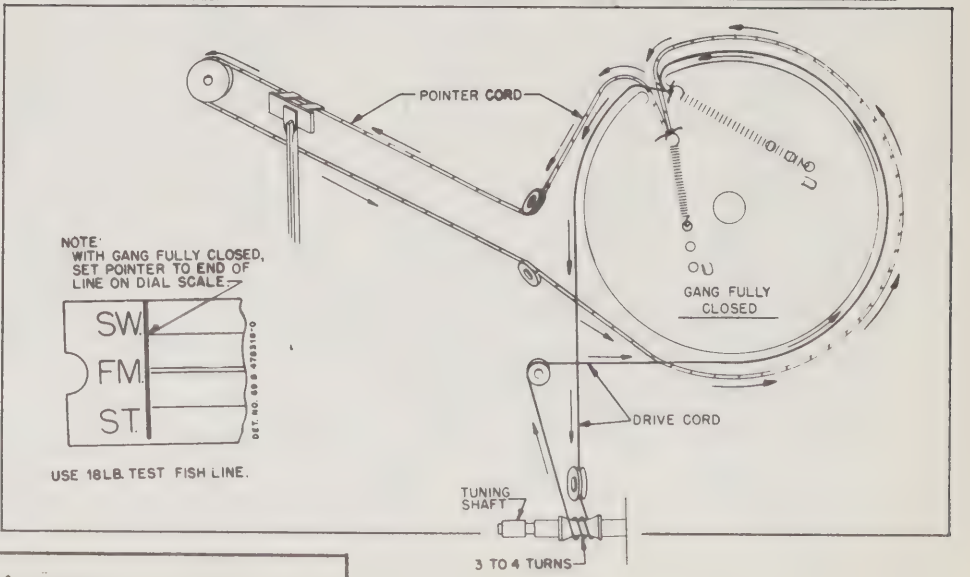
SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	FIELD RES.	VC IMP.	MOTOROLA PART No.	JENSEN PART No.		
72	1000Ω	3.5Ω	50K75592	ST-175# Mod. F10-S		#Shunt field coil with 2500Ω 10 Watt resistor.
	CONE DIA.	VC DIA.				
73	9½"	1"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			



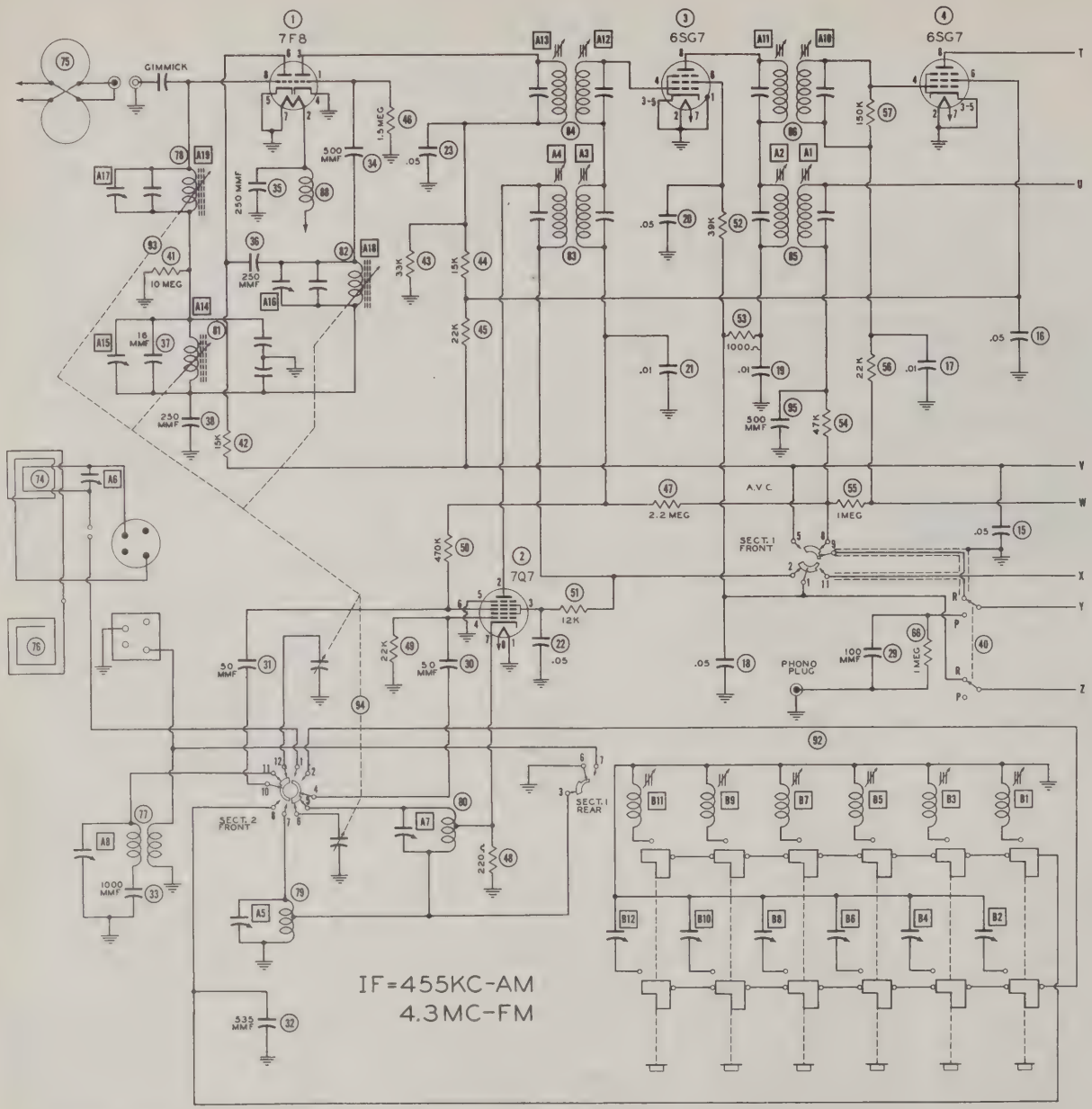
DISASSEMBLY INSTRUCTIONS

1. Remove four push-on type control knobs.
2. Remove loop antenna leads and remove loop from cabinet.
3. Loosen clamps holding FM antenna in cabinet. Remove FM antenna plug from chassis. Remove FM antenna from cabinet.
4. Remove speaker plug from speaker.
5. Disconnect phono-motor plug.
6. Remove phono-pickup plug from under record changer.
7. Remove four hex nuts holding speaker in cabinet. Remove speaker from cabinet.
8. Remove six screws holding chassis in cabinet. Remove chassis from cabinet.



DATE 12/47 SET #29 FOLDER #4719-18

MOTOROLA MODELS 75F31 (Ch. HS-36), 75F31A, 75F31B (Ch. HS-36A), 76F31 (HS-98) PAGE 5



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4719-18

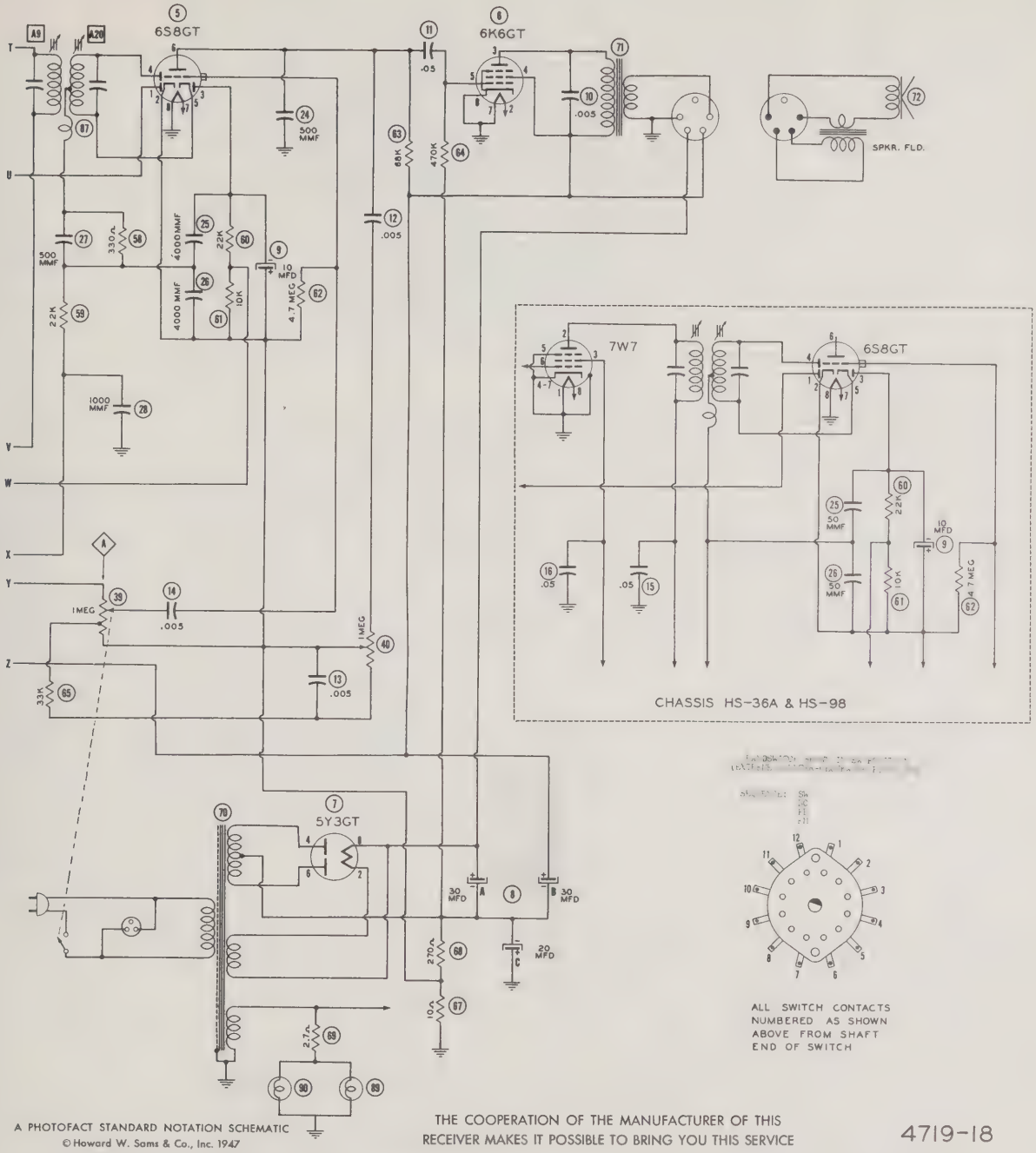
VOLTAGE READINGS TAKEN IN BROADCAST POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
♦ 1	7F8	-1.2VDC§	6.3VAC	60VDC	0V.	0V.	165VDC	0V.	-2.2VDC§
2	7Q7	0V.	245VDC	120VDC	-9.5VDC§	0V.	-.2VDC	0V.	6.3VAC
3	6SG7	0V.	0V.	0V.	-.6VDC	0V.	113VDC	6.3VAC	235VDC
♦ 4	6SG7	0V.	0V.	0V.	-.7VDC	0V.	103VDC	6.3VAC	24.1VDC
5	6SH7	-1.2VDC	-.6VDC	-1VDC	0V.	0V.	147VDC	6.3VAC	0V.
♦ 5	6SH7	-1.2VDC	-.7VDC	-1VDC	0V.	0V.	145VDC	6.3VAC	0V.
6	6X6GT	-17VDC	6.3VAC	230VDC	245VDC	-13VDC	-.6VDC	0V.	0V.
7	5Y3GT	0V.	300VDC	0V.	300VAC	0V.	300VAC	0V.	300VDC

§TAKEN WITH VACUUM TUBE VOLTMETER

♦ VOLTAGE READINGS TAKEN IN FM POSITION.



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THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

4719-18

RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

RESISTANCE READINGS

	Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
‡	1	7F8	1.5 Meg.	.1Ω	30KΩ	0Ω	0Ω	7.0Kω	0Ω	10 Meg.
	2	7W7	0Ω	160KΩ	170KΩ	22KΩ	0Ω	3.3 Meg.	1Ω	.1Ω
	3	6S87	0Ω	0Ω	0Ω	3 Meg.	0Ω	200KΩ	.1Ω	1.0MΩ
‡	4	6S87	0Ω	.2Ω	0Ω	30KΩ	0Ω	40KΩ	.1Ω	50KΩ
	5	6S80T	480KΩ	11Ω	30KΩ	INF.	INF.	250KΩ	.1Ω	0Ω
‡	5	6S80T	1.1 Meg.	11Ω	30KΩ	900KΩ	900KΩ	120KΩ	.1Ω	0Ω
	6	6K6GT	300Ω	.1Ω	160KΩ	160KΩ	440KΩ	11Ω	0Ω	0Ω
	7	5Y3GT	INF.	160KΩ	INF.	300Ω	INF.	310Ω	INF.	160KΩ

‡ RESISTANCE READINGS TAKEN IN FM POSITION.
RADIO-PHONO SWITCH IN RADIO POSITION.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

FM ALIGNMENT USING AM SIGNAL GENERATOR

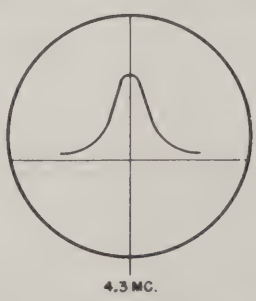
Use a 30% amplitude modulated signal throughout entire alignment.
Once the discriminator secondary has been aligned (A20) no further adjustments of the FM circuits should be made.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
6	.001 MFD	High side to Pin 1 (grid) 7F8. Low side to chassis.	4.3MC (amplitude mod.)	FM (Fully clockwise)	112MC	Across voice coil	A9,A10, A11,A12 A13	Turn A20 out completely then adjust A9,A10,A11, A12, A13 for maximum output.
7	DIRECT	Remove FM loop. Signal gen. across FM loop receptacle.		"	"	"	A14	Set spacing between end of core and bakelite piece to which it is mounted to 1/32".
8	DIRECT	"	90MC	"	90MC	"	A15,A17 A16	Adjust for maximum output.
9	DIRECT	"	105MC	"	105MC	"	A14,A19 A18	Adjust for maximum output. Repeat Steps 8 & 9 until no further improvement can be made making Step 9 final adjustment.
10		Loop (Reconnect FM Loop to chassis.)	"	"	Tune for maximum output.	"	A19	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
11	.001MFD.	High side to Pin 1 (grid) 7F8. Low side to chassis.	4.3MC	"	112MC	"	A20	Adjust for zero output.

FM ALIGNMENT USING SIGNAL FM GENERATOR AND OSCILLOSCOPE

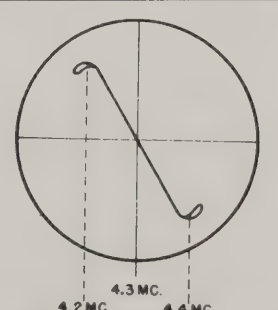
Connect synchronized sweep voltage from signal generator to horizontal deflection amplifier of scope. If this voltage is not phased properly resulting in a double trace, insert a 500KΩ variable resistor in series with the sweep voltage terminal and horizontal amplifier terminal. Connect a .002 MFD capacitor across horizontal amplifier terminals. Adjust the variable resistor to give a single trace. (It may be necessary on some scopes to use different values of R and C to get proper pattern.)

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
6	.01 MFD	High side to Pin #4 (grid) of 6SG7 2nd IF Amp. (4). Low side to chassis.	4.3MC (Freq. mod. 60∿, 250KC sweep)	FM (fully clockwise)	112MC	Vertical amplifier to Point A. Ground to chassis.	A9	Turn A20 out as far as it will go. Adjust A9 to obtain pattern symmetrical about the vertical axis per Figure 1.
7	.01 MFD	"	"	"	"	"	A20	Adjust for symmetrical pattern of Fig. 2 with maximum straightness of diagonal line and peaks occurring at about 100KC above and below 4.3MC.
8	.001MFD	High side to Pin #4 (grid) of 6SG7 1st IF Amp. (3). Low side to chassis.	4.3MC (Freq. Mod. 60∿, 200KC sweep)	"	"	"	A10, A11	Adjust for symmetrical pattern of previous Step with peaks occurring at a slightly lower deviation
9	.001MFD	High side to Pin #1 (grid) of 7F8. Low side to chassis.	"	"	"	"	A12,A13	Adjust for symmetrical pattern substantially linear between peaks.
						OUTPUT METER		
10		Disconnect FM Loop.					A14	Set spacing between end of osc. core and bakelite piece to which it is mounted to 1/32".
11	DIRECT	Across FM Loop receptacle.	90MC (30% freq. modulated)	FM	90MC	Across voice coil.	A15, A17, A16	Adjust for maximum output.
12	DIRECT	"	105MC (30% freq. modulated)	"	105MC	"	A14,A19 A18	Adjust for maximum output. Repeat Steps 11 & 12 several times until no further improvement can be made making Step 12 the final adjustment.
13		Loop (Reconnect FM Loop to Chassis)	"	"	Tune for maximum output.	"	A17	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.



PATTERN WITH DISCRIMINATOR PRIMARY CORRECTLY ADJUSTED

FIGURE 1

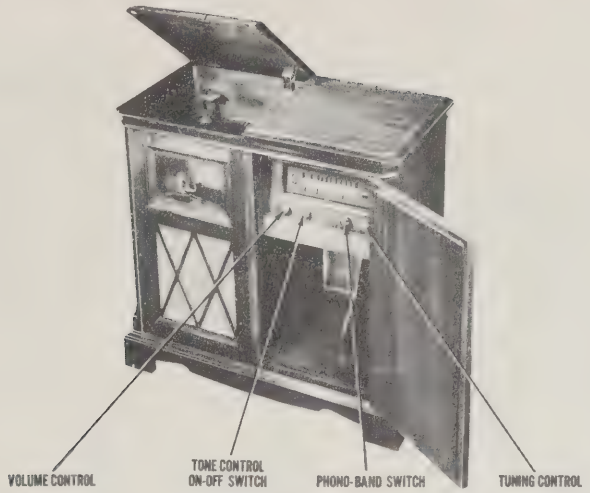


PATTERN WITH DISCRIMINATOR SECONDARY CORRECTLY ADJUSTED.

FIGURE 2

FOR AM ALIGNMENT SEE FRONT PAGE.

OLYMPIC
MODEL 7-724



OLYMPIC MODEL 7-724

TRADE NAME	Olympic, Model 7-724
MANUFACTURER	Olympic Radio & Television Inc., 34-01 38th Ave., Long Island City 1, N.Y.
TYPE SET	AC Operated Radio-Phono Combination, 2 Band Superheterodyne Receiver with Loop Ant.
TUBES (EIGHT)	Types, 6SG7 RF Amp., 6SA7 Converter, 6SK7 IF Amp., 6SQ7 Det.-AVC-AF, 6SQ7 Phase Inv., 6K6GT Power Output, 6V6GT Power Output, 5Y3GT Rectifier.
POWER SUPPLY	105-125V AC — RATING .73A @ 117V AC
TUNING RANGE—BROADCAST	535-1700KC — **SHORT WAVE** 5.7 -18.4MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to vertical reference line under the letters "SW". Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to rear stator of tuning cap. Low side to chassis.	455KC	BC (center position)	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output, then repeat.
2	.1 MFD.	High side to front stator of tuning cap. Low side to chassis.	1700KC	"	1700KC	"	A5	Adjust for maximum output
3	.1 MFD.	"	1500KC	"	Tune for maximum output.	"	A6	" " " "
4	.1 MFD.	"	600KC	"	"	"	A7	Rock tuning cap. and adjust for maximum output. Repeat Steps 2, 3 & 4.
5		Loop	"	"	"	"	A8	Fashion loop of several turns of wire and radiate signal into loop of receiver. Rock tuning cap. and adjust for maximum output.
6		"	1500KC	"	"	"	A9	Adjust for maximum output. Repeat Steps 5 & 6.
7	400Ω carbon res.	High side to ext. ant. terminal. Low side to chassis.	18MC	SW (fully clockwise)	18MC	"	A10	Tighten A10 firmly. Loosen until second peak is obtained. Adjust for maximum output. Check for image by tuning signal generator to 18.91MC. Signal should be heard. If it is not, retune sig. gen. to 18MC and open A10 until next peak is obtained. Adjust for maximum output. Recheck for image.
8	"	"	"	"	Tune for maximum output.	Across voice coil	A11, A12	Preset A11 & A12 by tightening firmly and loosening until first peak is obtained. Rock tuning cap. and adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: OLYMPIC PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6SG7	6SG7	8BK	
2	Converter	6SA7	6SA7	8R	
3	IF Amp.	6SK7	6SK7	8N	
4	Det.-AVC-AF	6SQ7	6SQ7	8Q	
5	Phase Inv.	6SQ7	6SQ7	8Q	
6	Power Output	6K6GT	6K6GT	7S	
7	Power Output	6K6GT	6K6GT	7S	
8	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: OLYMPIC PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
9A	30	450	C0768	FP339	DY-313	EL-330	AF444J4A	UP2245C	Filter - Blue
B	20	450							" - Red
C	20	25							Cathode Bypass - Yel.
10	.05	400	RCP10W4503A	TP426	MPH-4-05	TC-15	484-05	DT4S5	Line Filter
11	.002	500	RCP10W6202M	TP405	S-6-002	TC-22	684-002	DT6D2	Output Plate Bypass
12	.002	500	RCP10W6202M	TP405	S-6-002	TC-22	684-002	DT6D2	" "
13	.005	500	RCP10W6502A	TP408	S-6-005	TC-25	684-005	DT6D5	Audio Coupling
14	.005	500	RCP10W6502A	TP408	S-6-005	TC-25	684-005	DT6D5	" "
15	.005	500	RCP10W6502A	TP408	S-6-005	TC-25	684-005	DT6D5	" "
16	.002	500	RCP10W6202M	TP405	S-6-002	TC-22	684-002	DT6D2	Tone Comp.
17	.001	500	RCP10W6102A	TP404	S-6-001	TC-21	684-001	DT6D1	" "
18	.005	500	RCP10W6502A	TP408	S-6-005	TC-25	684-005	DT6D5	Audio Coupling
19	.01	500	RCP10W6103A	TP410	S-6-01	TC-11	684-01	DT6S1	" "
20	.01	500	RCP10W6103A	TP410	S-6-01	TC-11	684-01	DT6S1	IF Screen Bypass
21	.01	500	RCP10W6103A	TP410	S-6-01	TC-11	684-01	DT6S1	Conv. Screen Bypass
22	.02	200	RCP10W2203A	TP423	S-4-02	TC-12	684-02	DT6S2	AVC Filter
23	.01	500	RCP10W6103A	TP410	S-6-01	TC-11	684-01	DT6S1	RF Screen Bypass
24	.1	400	RCP10W4104L	TP428	S-4-1	TC-1	684-.1	DT6P1	RF Bypass Pwr. Supply
25	100	500	RCM20A101M	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	Inv. Plate Bypass
26	100	500	RCM20A101M	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	Tone Comp.
27	47	500	RCM20A470M	MC225	MO.5-45	1FM-45	1468-00005	5W5Q5	Osc. Grid
28	2700	500	RCM30B2725						Fixed Pad
29	1		C0311						RF Coupling Cer.
30	1		C0311						" "
31	100	500	RCM20A101M	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	" "
32	100	500	RCM20A101M	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	Fixed Trimmer
75	100	500	RCM20A101M	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	AF Plate Bypass

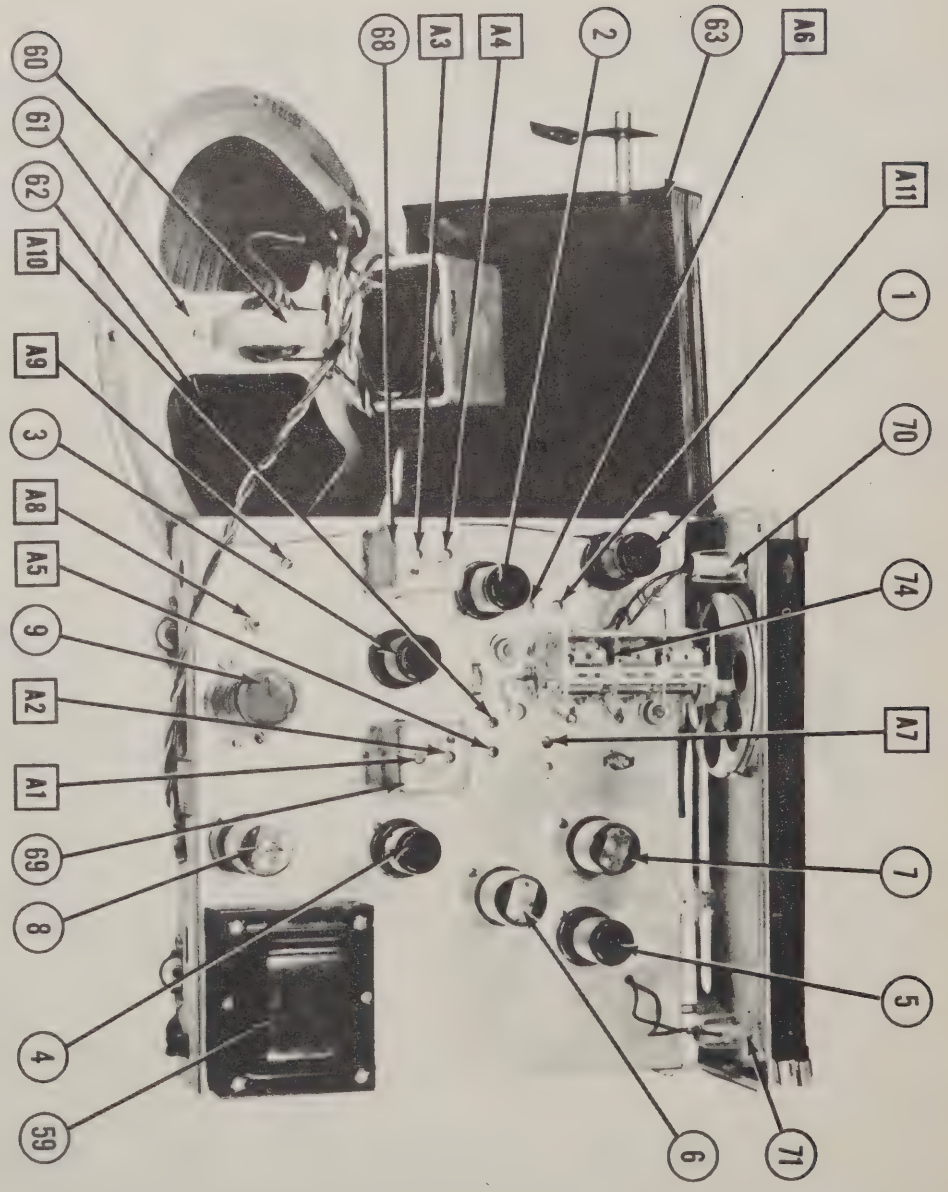
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: OLYMPIC PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
33A	2 Meg.	½	PT-567	TM254	D13-139X	AT-115	Volume Control
B	Shaft		Not Req.	SS25	E	KSS-3	Attach to 33A per instructions
34A	3 Meg.	½	PT-568	UM165	D13-140	AM-67-Z	Tone Control
B	Shaft		Not Req.	SS25	E	KSS-3	Attach to 34A per instructions
C	Switch		" "	M26	41	SW-A	" " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: OLYMPIC PART No.	IRC PART No.	IDENTIFICATION CODES
35	470Ω	½	REB-471M	BTS-470	Yl.-Vi.-Br. Antenna Loading
36	2.2 Meg.	½	REB-225M	BTS-2.2 Meg.	Red-Red-Grn. RF Grid
37	68KΩ	½	REB-683K	BTS-68K	Blue-Gray-Or. RF Screen Dropping
38	22KΩ	½	REB-223M	BTS-22K	Red-Red-Or. Oscillator Grid
39	22KΩ	2	RED-223K	BT-2-22K	Red-Red-Or. Converter Screen Dropping
40	6800Ω	½	REB-682K	BTS-6800	Blue-Gray-Red Oscillator Coil Shunt
41	2.2 Meg.	½	REB-225M	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
42	470KΩ	½	REB-474M	BTS-470K	Yl.-Vi.-Yl. Diode Load
43	330KΩ	½	REB-334M	BTS-330K	Or.-Or.-Yl. Series Phono
44	220KΩ	½	REB-224M	BTS-220K	Red-Red-Yl. Phono Shunt

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	OLYMPIC PART No.	IRC PART No.	
45	220Ω	½	REB-221M	BW-½-220	Red-Red-Br. Decoupling
46	220KΩ	½	REB-224M	BTS-220K	Red-Red-Yl. Tone Compensation
47	10 Meg.	½	REB-106M	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
48	470KΩ	½	REB-474M	BTS-470K	Yl.-Vi.-Yl. AF Plate Load
49	470KΩ	½	REB-474M	BTS-470K	Yl.-Vi.-Yl. Phase Inverter Plate Load
50	10 Meg.	½	REB-106M	BTS-10 Meg.	Br.-Blk.-Blue Phase Inverter Grid
51	470KΩ	½	REB-474M	BTS-470K	Yl.-Vi.-Yl. Output Grid
52	470KΩ	½	REB-474M	BTS-470K	Yl.-Vi.-Yl. Output Grid
53	100KΩ	½	REB-104M	BTS-100K	Br.-Blk.-Yl. Output Grid
54	390Ω	2	RED-391K	BW-2-390	Or.-White-Br. Output Cathode
55	220Ω	½	REB-221M	BW-½-220	Red-Red-Br. Parasitic Suppressor
56	47KΩ	2	RED-473M	BT-2-47K	Yl.-Vi.-Or. Bleeder
57	68KΩ	½	REB-683K	BTS-68K	Blue-Gray-Or. I.F. Screen
58	22Ω	½	REB-220K	BW-½-22	Red-Red-Blk. Parasitic Suppressor-See Note

Note: Not used in all models.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	OLYMPIC PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
59	117V AC @ .73A	620V CT @ .095A	5.0V AC @ 2.0A	6.2V AC @ 2.6A	TR-981	P-6013†	T22R05	P-2953

†Add series resistor to reduce plate voltage.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE PRI.	IMPEDANCE SEC.	DC RES. PRI.	DC RES. SEC.	OLYMPIC PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
60	7000Ω CT	3.8Ω	540Ω CT	.4Ω	Part of SK-384	A-3823	T22S47*	A-2901	*Use mounting holes provided.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	FIELD RES.	VC IMP.	OLYMPIC PART No.	JENSEN PART No.		
61	650Ω	3.8Ω	SK-384			
	CONE DIA.	VC DIA.				
62	11½"	1"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

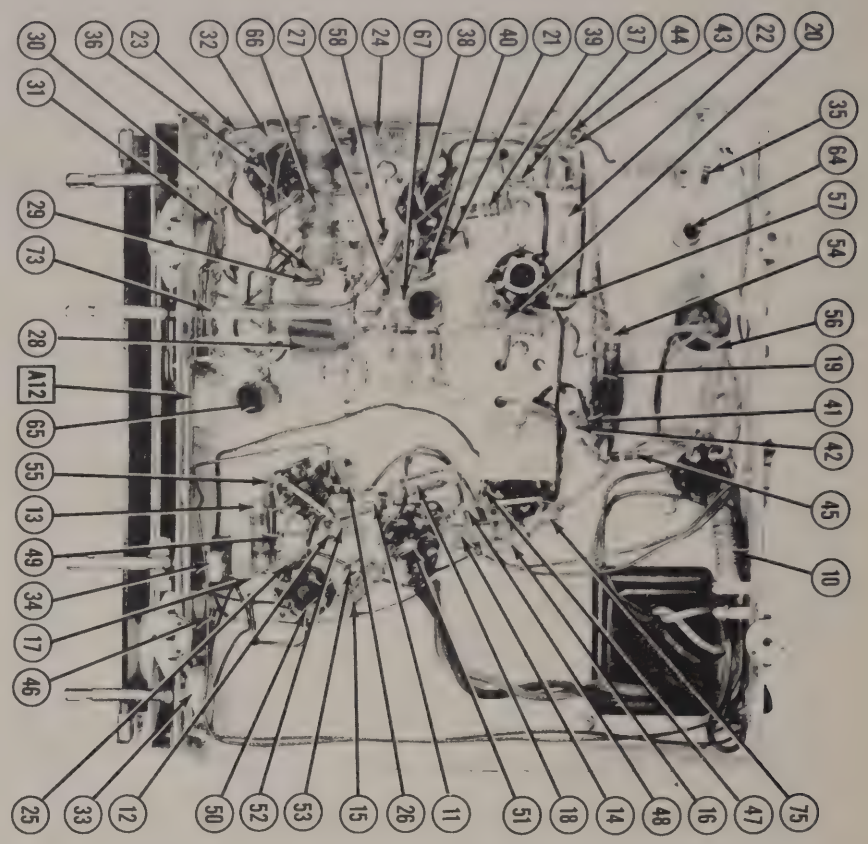
R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA OLYMPIC PART No.	REPLACEMENT DATA MEISSNER PART No.	
63	Loop Ant.	.1Ω	1.2Ω	LP1008		
64	Loop Load. Coil		2Ω	CL998		
65	SW Ant.Coil	.1Ω	0Ω	CL999	14-1044	
66A	BC RF Coil	57Ω	3.5Ω	CL1000		Items 66A & 66B wound on same form.
B	SW RF Coil	9Ω	.1Ω			
67A	BC Osc. Coil		5.5Ω	CL1001		Items 67A & 67B wound on same form.
B	SW Osc. Coil		.1Ω			
68	Input IF	20Ω	20Ω	TR781	16-6658	
69	Output IF	20Ω		TR782	16-6670	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA OLYMPIC PART No.		INSTALLATION NOTES
70	Bayonet	6-8	0.15A	Brown	BU-187		Type 47
71	"	"	"	"	"		"

CHASSIS—BOTTOM VIEW



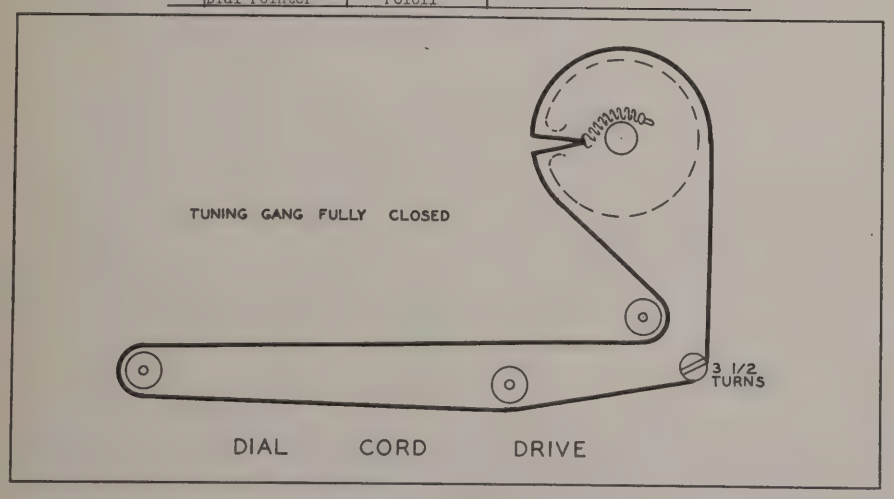
PARTS LIST AND DESCRIPTIONS (Continued)

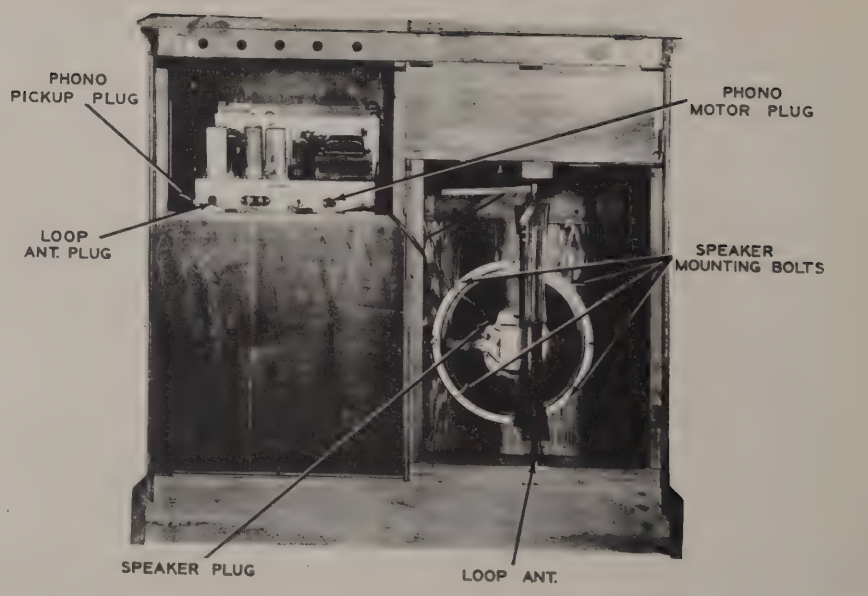
PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA OLYMPIC PART No.	REPLACEMENT DATA ASTATIC PART No.	REMARKS
72		L70	

MISCELLANEOUS

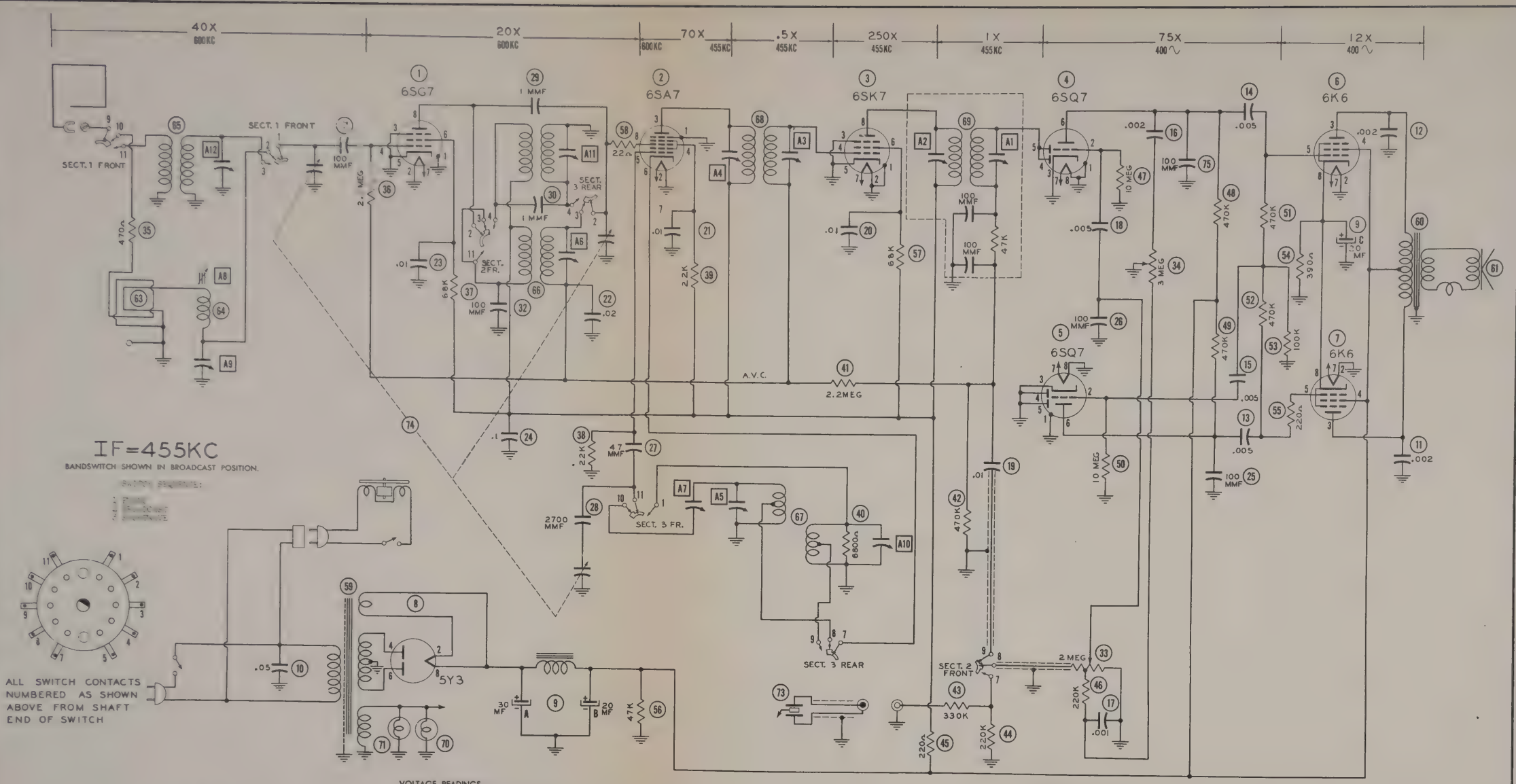
ITEM No.	PART NAME	OLYMPIC PART No.	NOTES
73	Switch	SW985	Band-Phono
74	Tuning Cap.	CV144	
A5, A10	Dual Trimmer	CT389	BC Osc. Adj. / SW " "
A6, A11	Dual Trimmer	CT389	BC RF Adj. / SW RF Adj.
A7	Padder Cap.	CT440	BC Osc. Pad.
A9	Trimmer	CT1002	BC Ant. Adj.
A12	"	CT1002	SW Ant. Adj.
	Dial Scale	DL1003	Glass
	Dial Pointer	PO1011	





DISASSEMBLY INSTRUCTIONS

1. Remove four push-on type control knobs.
2. Remove loop ant. plug from chassis.
3. Remove short wave antenna lead from chassis.
4. Remove phono-motor plug from chassis.
5. Remove phono-pickup plug from chassis.
6. Remove speaker plug from speaker.
7. Remove four screws holding chassis in cabinet. Remove chassis from cabinet.
8. Remove four Phillips head screws holding loop antenna in cabinet. Remove loop from cabinet.
9. Remove four hex nuts holding speaker in cabinet. Remove speaker from cabinet.



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SG7	0V.	0V.	0V.	-.6VDC	0V.	92VDC	6.2VAC	260VDC
2	6SA7	0V.	6.2VAC	260VDC	93VDC	-5.8VDC§	0V.	0V.	-.5VDC
3	6SK7	0V.	0V.	0V.	-.5VDC	0V.	83VDC	6.2VAC	260VDC
4	6SQ7	0V.	-.5VDC	0V.	-.4VDC	-.4VDC	95VDC	6.2VAC	0V.
5	6SQ7	0V.	-.5VDC	0V.	0V.	0V.	102VDC	6.2VAC	0V.
6	6K6GT	0V.	0V.	260VDC	260VDC	0V.	0V.	6.2VAC	22VDC
7	6K6GT	0V.	0V.	260VDC	260VDC	0V.	0V.	6.2VAC	22VDC
8	5Y3GT	0V.	320VDC	0V.	310VAC	0V.	310VAC	260VDC	320VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SG7	0Ω	0Ω	0Ω	5 Meg.	0Ω	120KΩ	.1Ω	50KΩ
2	6SA7	0Ω	.1Ω	50KΩ	70KΩ	22KΩ	.6Ω	0Ω	3 Meg.
3	6SK7	0Ω	0Ω	0Ω	3 Meg.	0Ω	120KΩ	.1Ω	50KΩ
4	6SQ7	0Ω	10 Meg.	0Ω	520KΩ	520KΩ	520KΩ	.1Ω	0Ω
5	6SQ7	0Ω	10 Meg.	0Ω	0Ω	0Ω	520KΩ	.1Ω	0Ω
6	6K6GT	100KΩ	0Ω	50KΩ	50KΩ	500KΩ	2.3 Meg.	.1Ω	390Ω
7	6K6GT	2 Meg.	0Ω	50KΩ	50KΩ	500KΩ	500KΩ	.1Ω	390Ω
8	5Y3GT	INF.	50KΩ	INF.	90Ω	INF.	95Ω	50KΩ	50KΩ

VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.
§TAKEN WITH VACUUM TUBE VOLTMETER.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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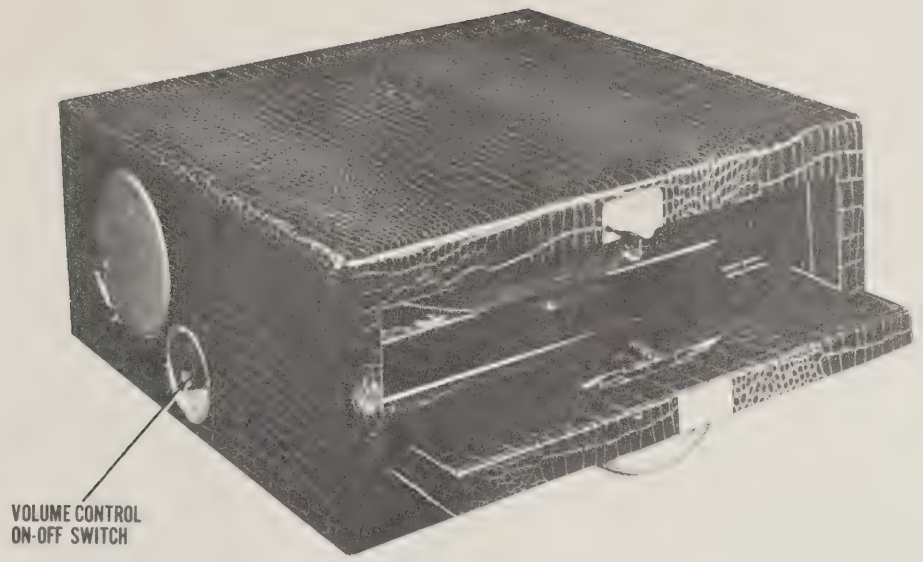
The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

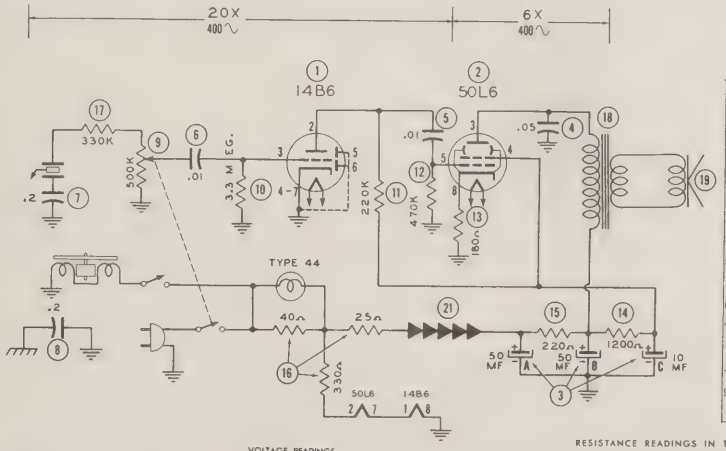
4719-19

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



PHILCO MODEL 48-1200

TRADE NAME	Philco, Model 48-1200
MANUFACTURER	Philco Corp., Tioga & "C" Sts., Philadelphia, Pa.
TYPE SET	AC Operated Record Player with Two Tube Amp. and Speaker
TUBES (TWO)	Types, 14B6 AF Amp., 50L6GT Power Output
POWER SUPPLY	110-120 Volts AC RATING .240 Amps. @ 117 Volts AC



DISASSEMBLY INSTRUCTIONS

1. Remove one push-on type control knob.
2. Remove four hex head screws holding record player in cabinet.
3. To open the panel on back of cabinet turn the two copper colored screws a half turn.
4. Remove pilot lamp from clamp in cabinet.
5. Slide the record player out rear of cabinet.
6. Unsolder leads from chassis to player.
7. Remove three hex nuts holding chassis to player. Remove chassis from player.
8. Unsolder green lead from speaker.
9. Remove two screws holding speaker. Remove speaker from player.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	14B6	14VAC	73VDC	-.6VDC	0V.	0V.	0V.	0V.	0V.
2	50L6GT	0V.	62VAC	108VDC	116VDC	0V.	0V.	14VAC	8.9VDC

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	14B6	14Ω	240KΩ	3.3 Meg.	0Ω	0Ω	0Ω	0Ω	0Ω
2	50L6GT	INF.	65Ω	22KΩ	22KΩ	470KΩ	0Ω	14Ω	14Ω

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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4719-20

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: PHILCO PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	AF Amp.	14S6	14S6	8W	
2	Power Output	50L6GT	50L6GT	7AC	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: PHILCO PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
3A	50	150			DY-2x50-150	EL-25	AF1010D	UP5515	■ Filter
B	50	150	30-2568-16						▲ "
C	10	150			M-10-150	UT-121	PRS-150-12	BR1215	"
4	.05	400	61-0122	TP426	S-4-05	TC-15	484-05	DT4S5	Output Plate Bypass
5	.01	400	61-0120	TP421	S-4-01	TC-11	484-01	DT4S1	Audio Coupling
6	.01	400	61-0120	TP421	S-4-01	TC-11	484-01	DT4S1	" "
7	.2	400	45-3500-3	TP429	S-4-2	TC-2	484-.2	DT4P2	Phono Isolation
8	.2	400	45-3500-3	TP429	S-4-2	TC-2	484-.2	DT4P2	Line Isolation

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PHILCO PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
9A	500KΩ	½	33-5538-20	MR48	D13-133	M-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 9A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PHILCO PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
10	3.3 Meg.	½	66-5333340	BTS-3.3 Meg.	Or.-Or.-Grn. AF Grid
11	220KΩ	½	66-4223340	BTS-220K	Red-Red-Yl. AF Plate Load
12	470KΩ	½	66-4473340	BTS-470K	Yl.-Vi.-Yl. Output Grid
13	180Ω	½	66-1183340	BW-½-180	Br.-Gray-Br. Output Cathode
14	1200Ω	½	66-2123340	BTS-1200	Br.-Red-Red Filter
15	220Ω	1	66-1224340	BW-1-220	Red-Red-Br. "
16A	40Ω	2		BW-2-39	Pilot Light Shunt
B	330Ω	75			Line Dropping
C	25Ω	1		BW-1-27	Rectifier Ballast
17	330KΩ	½		BTS-330K	Or.-Or.-Yl. Series Phono-See Note

Note-Some models use 1 Meg. in this application. IRC replacement BTS-1 Meg.

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: PHILCO PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
18	2450Ω	3.4Ω	240Ω	.5Ω	32-8310-3	A-3876	T22845	A-2928	

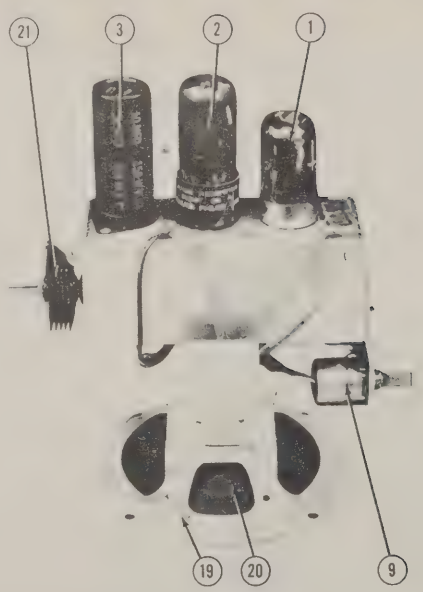
SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: PHILCO PART No.	JENSEN PART No.		INSTALLATION NOTES
19	FIELD PM	VC IMP. 3.4Ω	36-1625	ST-105* Mod. P5-X		*Drill and tap magnet frame.
20	CONE DIA. 4½"	VC DIA. 1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

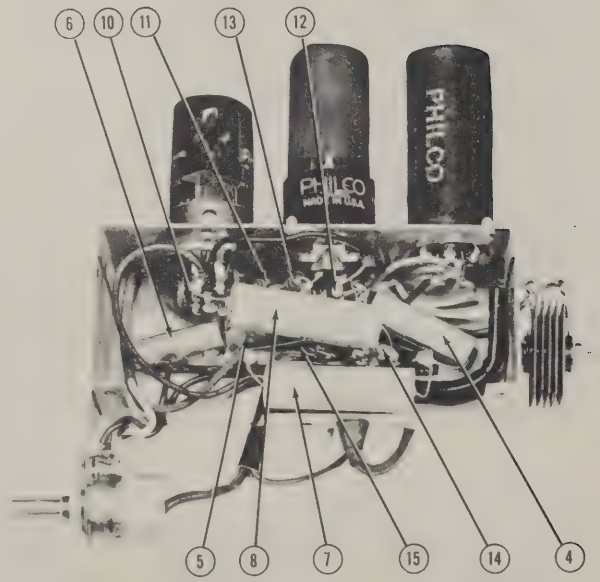
MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
21	Rectifier	CR10O	Selenium

CHASSIS—TOP VIEW



CHASSIS—BOTTOM VIEW



PHILCO
MODEL 46-1201 (REVISED)

PHILCO
MODEL 46-1201 (REVISED)

PHILCO MODEL 46-1201 (REVISED)

TRADE NAME	Philco, Model 46-1201 (Revised)
MANUFACTURER	Philco Corp., Tioga &"C" Sts., Philadelphia, Pa.
TYPE SET	AC Operated Combination Phono-Radio Superheterodyne with Loop Antenna
TUBES (FIVE)	Types, 7A8 Converter, 7B7 IF Amp., 7C6 Det.-AVC-AF, 50A5 or 50B5 Power Output, 50X6 or 50Y6 or 35Y4 Rectifier.
POWER SUPPLY	105-120 Volts AC
TUNING RANGE—BROADCAST	540-1600KC RATING .340 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Alignment should be performed with chassis installed in cabinet and loop connected. Record player must be removed to gain access to adjustment points.

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low freq. end of dial.

Use isolation transformer if available. If not, connect a .1 MFD capacitor in series with low side of signal generator and chassis.

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.05 MFD	High side to blue ant. lead after disconnecting same from chassis. Low side to chassis.	455KC	Tuning cap. fully closed	From voice coil connection on Ant. terminal strip to chassis.	A1,A2, A3,A4.	Preset A4 by turning it until tight. Then adjust in order given for maximum output. If isolation transformer is not used reduce dummy ant. to .001 to reduce hum modulation.
2	.05 MFD	"	1600KC	1600KC	"	A5	Adjust for maximum output.
3	.05 MFD	"	1500KC	Tune for maximum output	"	A6	" " " "

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DATE 12/47 SET #29 FOLDER #4719-21

PARTS LIST AND DESCRIPTIONS

PHILCO MODEL 46-1201 (Revised)

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: PHILCO PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	7A8	7A8	8U	
2	IF Amp.	7B7	7B7	8V	
3	Det.-AVC-AF	7C6	7C6	8W	
4A	Power Output	50A5	50A5	6AA	
B	" "	50B5	50B5	7BZ	Code 130
5A	Rectifier	50X6	50X6	7AJ	Code 126, Code 128
B	"	35Y4	35Y4	5AL	Code 122
C	"	50Y6	50Y6	7Q	Code 125, Code 127

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: PHILCO PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6	15	150	30-2559	TC44	M-16-150	UT-161	PRS150-16	BR1615	Filter *
7	15	150	30-2559	TC44	M-16-150	UT-161	PRS150-16	BR1615	" *
8A	40	200	30-2554		M-40-350	UT-402	PRSA250-20-20	BR4025	" *
B	10	200			M-8-250	UT-122	PRS250-20	BR1225	" *
9	.05	600		TP415	MPH-6-05	TC-15	684-05	DT6S5	Line Filter
10	.05	400		TP426	S-4-05	TC-15	484-05	DT4S5	Output Plate Bypass
11	.01	400		TP421	S-4-01	TC-11	484-01	DT4S1	Audio Coupling
12	.01	400		TP421	S-4-01	TC-11	484-01	DT4S1	"
13	.2	400		TP429	S-4-2	TC-2	484-.2	DT4P2	Phono Isolation
14	.05	200		TP426	S-4-05	TC-15	484-05	DT4S5	Screen Bypass
15	.1	200		TP428	S-4-1	TC-1	484-.1	DT4P1	AVC Filter
16	.0015	600		TP404	S-6-001	TC-21	684-001	DT6D1	Ext. Ant. Isolation
17	.2	400		TP429	S-4-2	TC-2	484-.2	DT4P2	Line Isolation
18	240			MC240	MO.5-325	1FM-325	1468-00025	5W5T25	Output Grid Bypass
19	100			MC235	MO.5-31	1FM-31	1468-0001	5W5T1	RF Bypass Vol. Cont.
20	100			MC235	MO.5-31	1FM-31	1468-0001	5W5T1	RF Coupling†

†Used in models Code 128 and above. *Items 6, 7 and 8 not used on Code 122. Code 122 used Philco Part #30-2573 (30-25-20 MFD).

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PHILCO PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
21	1 Meg.	½	33-5519				Volume Control & Switch-See Note

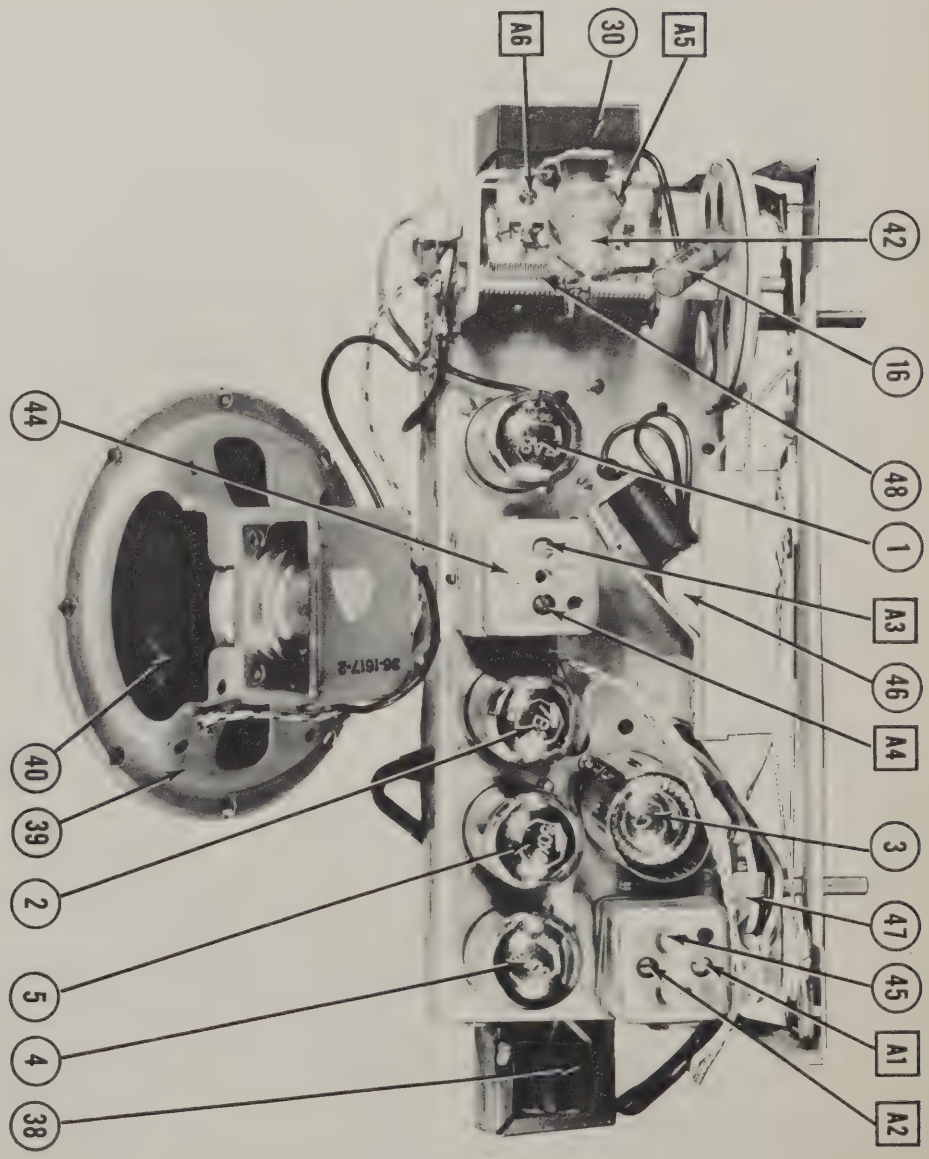
Note-Item 21 acts as two 500KΩ controls tapered opposite each other from center tap.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PHILCO PART No.	IRC PART No.	IDENTIFICATION CODES
22	120K	½	66-4123340	BTS-120K	Br.-Red-Yl. Oscillator Grid
23	1 Meg.	½	66-5103340	BTS-1 Meg.	Br.-Blk.-Grn. Converter Grid
24	47K	½	66-3473340	BTS-47K	Yl.-Vi.-Or. Screen Dropping
25	10 Meg.	½	66-6103340	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
26	2.2 Meg.	½	66-5223340	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
27	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. AF Plate Load
28	130Ω	½	66-123340	BW-½-120	Br.-Or.-Br. Output Cathode
29	8200Ω	1	66-2824340	BTA-8200	Gray-Red-Red Filter
30	500Ω	10	33-3435-3	AB-500	"
31	80Ω	10	33-3425		Rectifier Ballast
32	220KΩ	½	66-4223340	BTS-220K	Red-Red-Yl. Phono Shunt
33	150KΩ	½		BTS-150K	Br.-Grn.-Yl. Phono Shunt
34	120KΩ	½	66-4123340	BTS-120K	Br.-Red-Yl. Line Isolation
35	220Ω	1	66-1224340	BW-1-220	Red-Red-Br. Filter - See Note
36	1200Ω	½	66-2123340	BTA-1200	Br.-Red-Red " " "
37	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Output Grid

Note - Used in Code 122 only.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		PHILCO PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
38	2400Ω	3.5Ω	300Ω	.7Ω	32-8210	A-3876	T22S45	A-2928	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			PHILCO PART No.	JENSEN PART No.		
	FIELD	VC IMP.		ST-107		
39	PM	3.5Ω	36-1617-2	Mod. P5-V		
	CONE DIA.	VC DIA.				
40	4-5/8"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

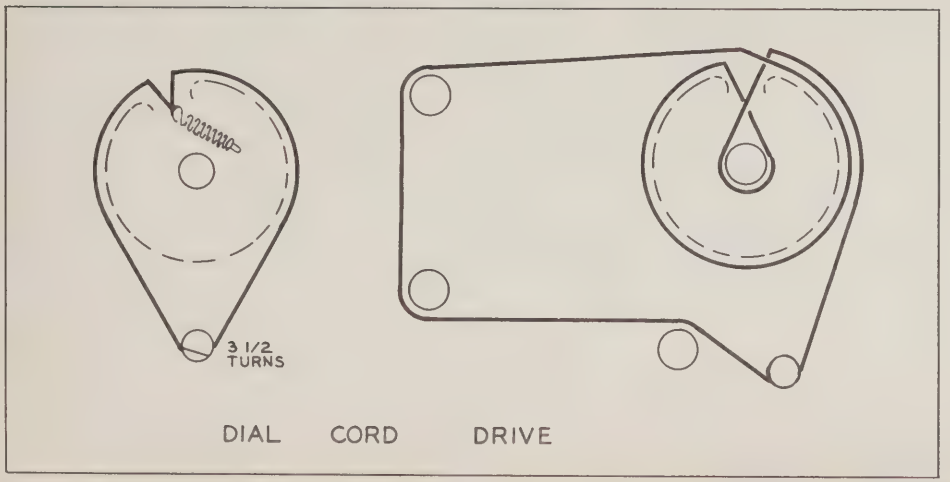
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	PHILCO PART No.	MEISSNER PART No.	
41	Loop Ant.		3.3Ω			
42	Ant. Coil	32Ω	.8Ω			
43	Osc. Coil	3Ω	7Ω		14-1040	Add 50 MMFD from grid to high side tuning cap.
44	Input IF	25Ω	25Ω		16-6658	
45	Output IF	21Ω			16-6670	

DIAL LIGHT

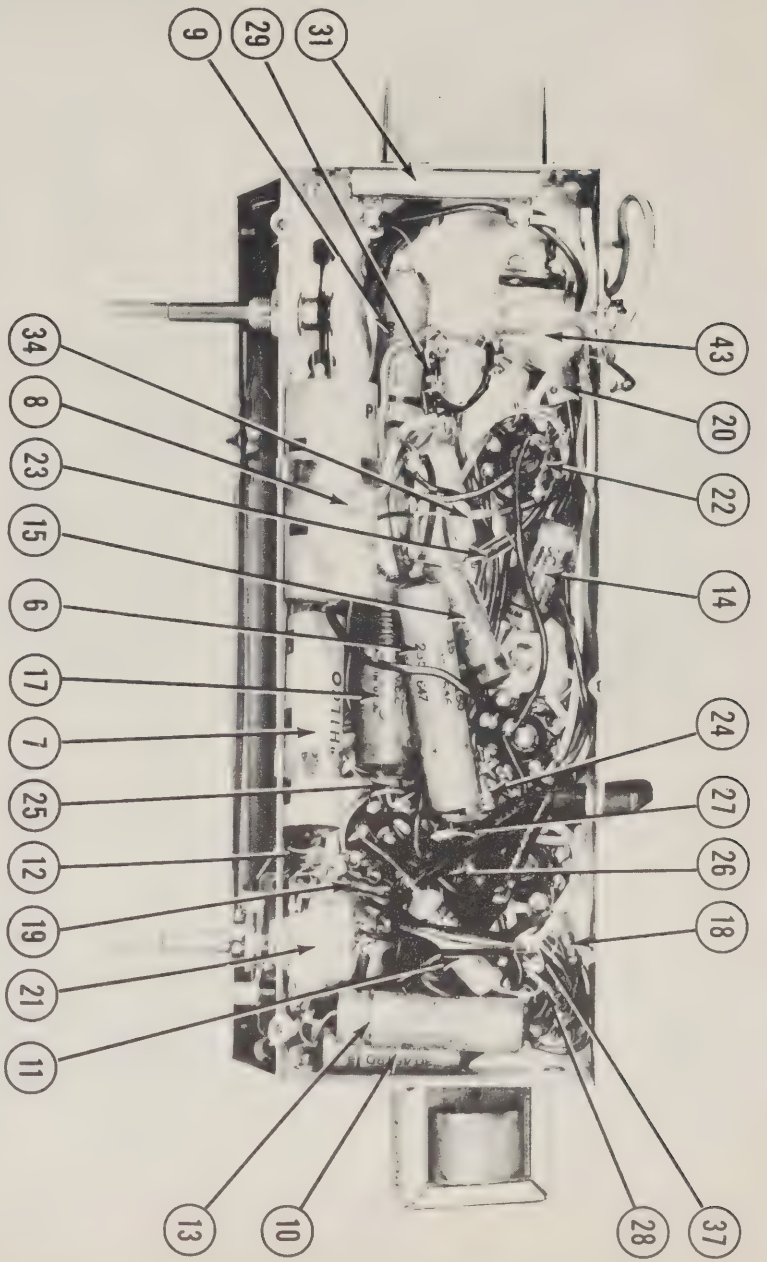
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					PHILCO PART No.		
46A	Screw	120					Type 7W
B	Bayonet	6-8	.15	Brown	34-2068		Type 47 Code 122

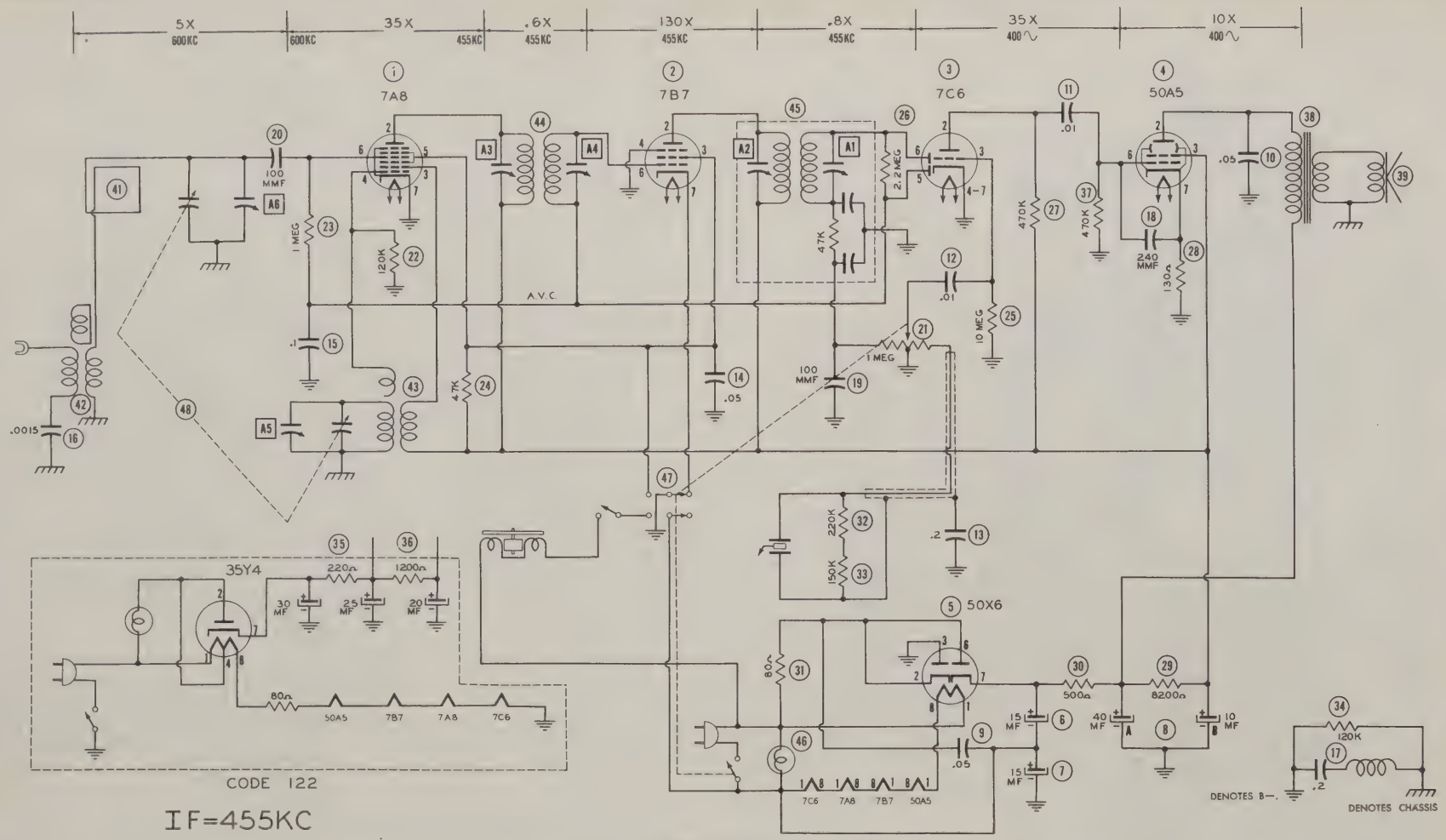
MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
47	Switch		Radio-Phono (DPDT)
48	2 Gang Var. Cap.	31-2527-1	(28-502MMF, 28-175 MMF)



CHASSIS—BOTTOM VIEW





DC READINGS TAKEN FROM B-.

AC READINGS TAKEN FROM SWITCH ON VOLUME CONTROL AS COMMON NEGATIVE.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7A8	6.8VAC	90VDC	90VDC	-8VDC§	37VDC	-.45VDC	0V.	13VAC
2	7B7	19VAC	90VDC	37VDC	0V.	0V.	-.45VDC	0V.	13VAC
3	7C6	0V.	55VDC	-.45VDC	0V.	-.45VDC	-.5VDC	0V.	6.3VAC
4	50A5	67VAC	152VDC	90VDC	0V.	0V.	0V.	7VDC	19VAC
5	50X6	117VAC	105VAC	0V.	0V.	90VDC	105VAC	195VDC	67VAC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7A8	7Ω	50KΩ	50KΩ	140KΩ	100KΩ	.4 Meg.	0Ω	14Ω
2	7B7	20Ω	50KΩ	100KΩ	0Ω	0Ω	3 Meg.	0Ω	14Ω
3	7C6	0Ω	520KΩ	10 Meg.	0Ω	3 Meg.	600KΩ	0Ω	7Ω
4	50A5	60Ω	50KΩ	50KΩ	INF.	0Ω	540KΩ	130Ω	20Ω
5	50X5	80Ω	230KΩ	0Ω	INF.	40KΩ	230KΩ	50KΩ	60Ω

RADIO-PHONO SWITCH IN RADIO POSITION.

§TAKEN WITH VACUUM TUBE VOLTMETER.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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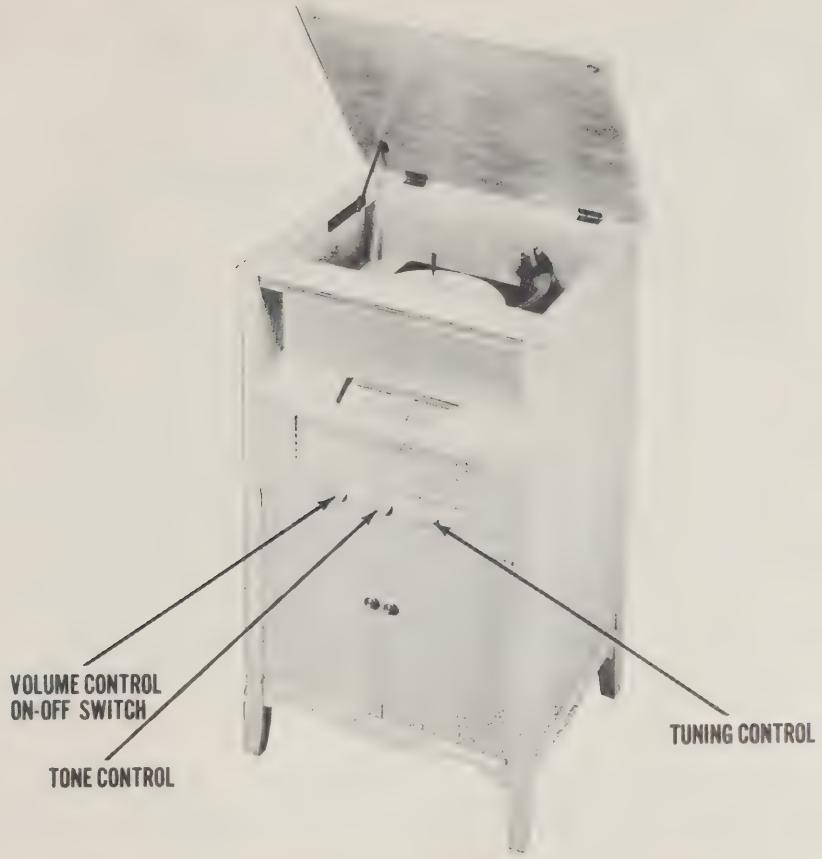
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

4719-21

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

SENTINEL MODELS
293-CT, IU-293-CT



SENTINEL MODELS
293-CT, IU-293-CT

SENTINEL MODEL 293-CT

TRADE NAME	Sentinel, Models 293-CT, IU-293-CT
MANUFACTURER	Sentinel Radio Corp., 2020 Ridge Ave., Evanston, Ill.
TYPE SET	AC Operated Combination Phono-Radio Superheterodyne Receiver with Loop Antenna
TUBES (SIX)	Types, 12SK7 RF Amp., 12SA7 Converter, 12SK7 IF Amp., 12SQ7 Det.-AVC-AF, 35L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	110-120 Volts AC
TUNING RANGE—BROADCAST	530-1650KC RATING .240 Amps. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not connect a .1 MFD capacitor in series with Low side of signal generator and chassis. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.2 MFD.	High side to Pin 8 (grid) 12SA7. Low side to B-.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used, reduce dummy ant. to .001 MFD. to reduce hum modulation.
2	200MMFD	High side to ext. ant. lead. Low side to ext. ground lead.	"	Tuning cap. fully closed	"	A5	Adjust for minimum output.
3	200MMFD	"	1650KC	Tuning cap. fully open.	"	A6	Adjust for maximum output. Trimmer opposite A6 is a factory adjustment and need not be disturbed unless calibration is impossible with A6 alone.
4	200MMFD	"	1400KC	Tune for maximum output.	"	A7	Adjust for maximum output.

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DATE 12/47 SET #29 FOLDER #4719-22

PARTS LIST AND DESCRIPTIONS

SENTINEL MODELS 293-CT, IU-293-CT

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: SENTINEL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	12SK7	12SK7	8N	
2	Converter	12SA7	12SA7	8R	
3	IF Amp.	12SK7	12SK7	8N	
4	Det.-AVC-AF	12SQ7	12SQ7	8Q	
5	Power Output	35L6GT	35L6GT	7AC	
6	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SENTINEL PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	50	150	25E6	2N521	DSB-2x50-150	TA-505	PRSA150-50-50	EZ5515	Filter - Yellow
B	50	150							" - Red
8	.05	400	23E416	TP426	S-4-05	TC-15	484-05	DT4S5	Line Filter
9	.01	400	23E411	TP421	S-4-01	TC-11	484-01	DT4S1	Output Plate Bypass
10	.005	600	23E408	TP408	S-6-005	TC-25	684-005	DT6D5	Audio Coupling
11	.002	600	23E405	TP405	S-6-002	TC-22	684-002	DT6D2	Tone Compensation
12	.005	600	23E408	TP408	S-6-005	TC-25	684-005	DT6D5	Audio Coupling
13	.05	400	23E416	TP426	S-4-05	TC-15	484-05	DT4S5	Phono Isolation
14	.01	400	23E211	TP421	S-4-01	TC-11	484-01	DT4S1	RF Screen Bypass
15	.05	200	23E216	TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter
16	.2	400	23E421	TP429	S-4-2	TC-2	484-.2	DT4P2	Line Isolation-See Note
17	100	500	23E39	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	Tone Compensation
18	250	500	23E42	MC240	MO.5-325	1FM-325	1468-00025	5W5T25	Diode RF Filter
19	50	500	23E37	MC225	MO.5-45	1FM-45	1468-00005	5W5Q5	Osc. Grid Cap.
20	250	500	23E42	MC240	MO.5-325	1FM-325	1468-00025	5W5T25	RF Coupling
21	100	500	23E39	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	AF Plate Bypass

Note-Used only in Underwriters approved models.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SENTINEL PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
22A	500KΩ	½	28E24	MK401#	D13-133#	AM-60-Z#	Volume Control (Late production)
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 22A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "
22A	500KΩ	½	28E7	MK401*#	D13-133*#	AM-60-Z*#	Volume Control (early production)
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 22A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "
23A	500KΩ	½	28E8	MK401	D13-133	AM-60-Z	Tone Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 23A per instructions

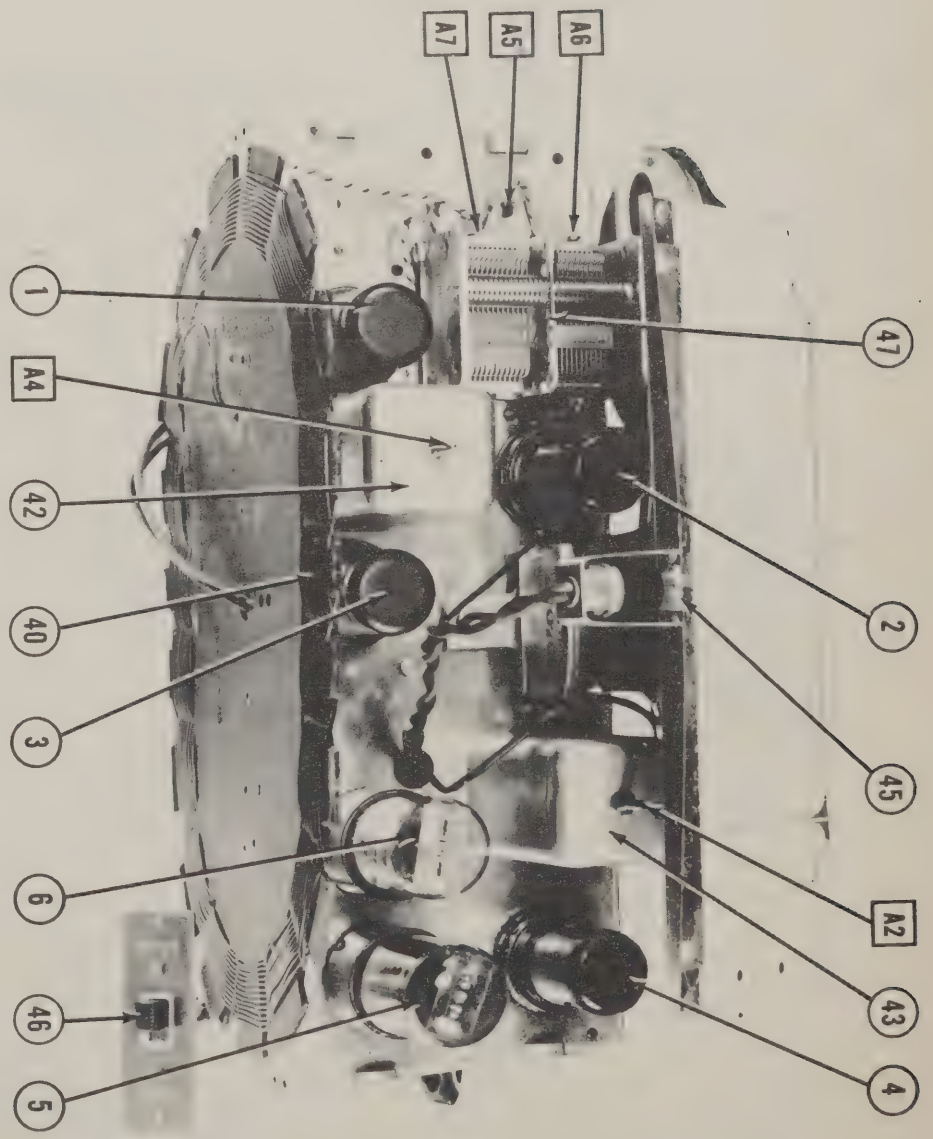
#Wrap scotch tape around shaft adjacent to lock ring for dial cord surface.
*Install a 47KΩ resistor in series with the right hand terminal of the control and the lead connecting to the same terminal of the original control. (Controls viewed from shaft side, terminals down.)

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SENTINEL PART No.	IRC PART No.	IDENTIFICATION CODES
24	220KΩ	1/3	27E224	BTS-220K	Red-Red-Yl. Line Isolation-See Note
25	47KΩ	1/3	27E473	BTS-47K	Yl.-Vi.-Or. RF Screen Dropping
26	8200Ω	1/3	27E822	BTS-8200	Gray-Red-Red RF Plate Load
27	220KΩ	1/3	27E224	BTS-220K	Red-Red-Yl. Converter Grid
28	22KΩ	1/3	27E223	BTS-22K	Red-Red-Or. Oscillator Grid
29	3.3 Meg.	1/3	27E335	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
30	3.3 Meg.	1/3	27E335	BTS-3.3 Meg.	Or.-Or.-Grn. AF Grid
31	470KΩ	1/3	23E474	BTS-470K	Yl.-Vi.-Yl. AF Plate Load
32	470KΩ	1/3	23E474	BTS-470K	Yl.-Vi.-Yl. Output Grid
33	150Ω	1/3	27E151	BW-½-150	Br.-Grn.-Br. Output Cathode
34	1000Ω	1	27E102-3	BTA-1000	Br.-Blk.-Red Filter
35	100Ω	1/2	27E101-2	BW-½-100	Br.-Blk.-Br. Pilot Light Shunt
36	47Ω	1/2	27E470-2	BW-½-47	Yl.-Vi.-Blk. Rectifier Ballast

Note-Used only in Underwriters approved models.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		SENTINEL PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
37	4565Ω	3.6Ω	248Ω	.93Ω	22E8	A-3876‡	T22S46‡	A-2900‡	‡Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			SENTINEL PART No.	JENSEN PART No.		
	FIELD	VC IMP.				
38	PM	3.6Ω	1E1			
	CONE DIA.	VC DIA.				
39	4"x6"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

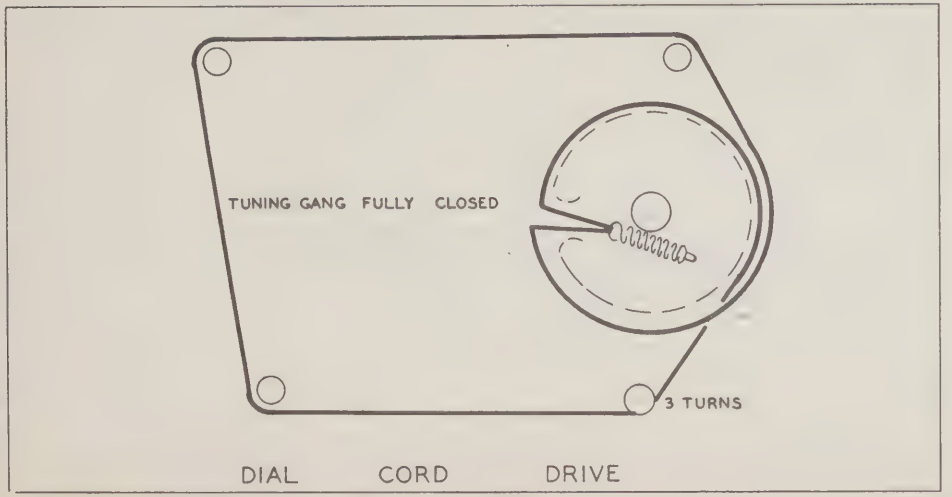
ITEM No.	USE	DC RES.		REPLACEMENT DATA	
		PRI.	SEC.	SENTINEL PART No.	MEISSNER PART No.
40	Loop Ant.	.1Ω	1Ω	20E67	
41	Osc. Coil	.5Ω	8Ω	20E64	14-1040
42	Input IF	11Ω	11Ω	20E21	16-5740
43	Output IF	11Ω	10Ω	20E22	16-5742
44	Wave Trap			2E19	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					SENTINEL PART No.		
45	Bayonet	6-8	0.15	Brown	40E1		Type 47

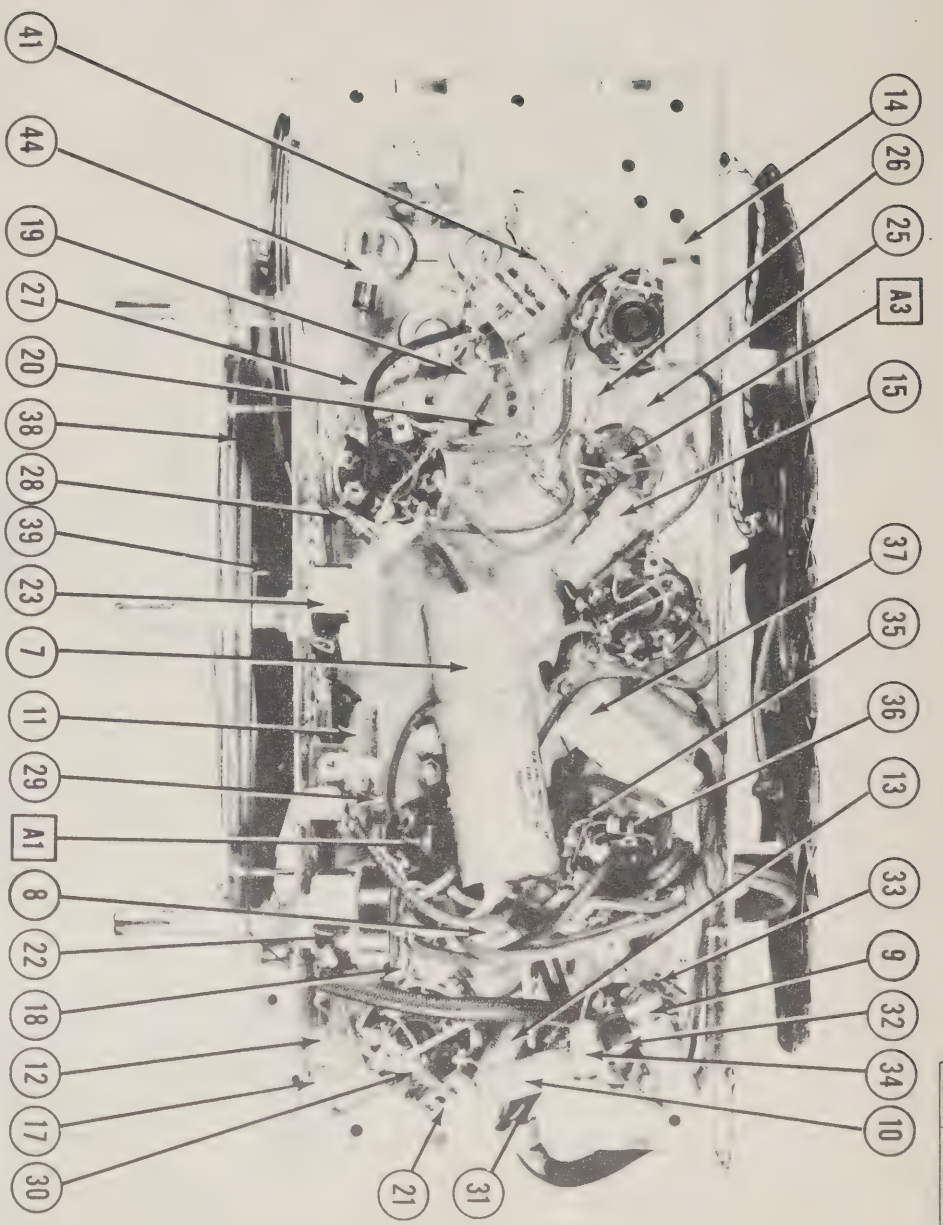
MISCELLANEOUS

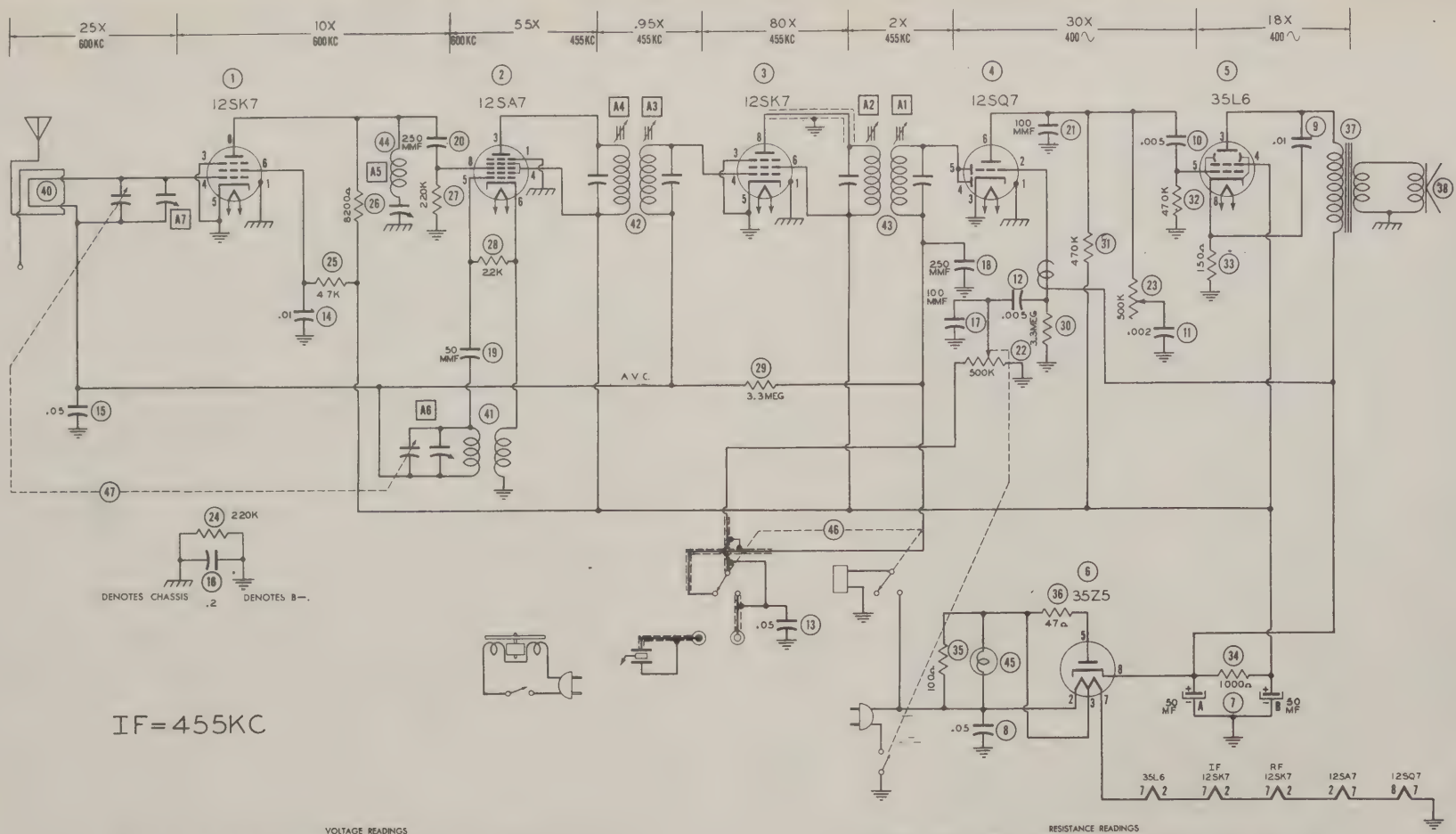
ITEM No.	PART NAME	SENTINEL PART No.	NOTES
46	Switch	20E203	Radio-Phono (D.P.D.T.)
47	2 Gang Var. Cap.	24E6	(30-463 MMF, 17-194 MMF)
A5	Trimmer	24E3	IF Wave Trap Adj.
	Dial Scale	36E16	Glass
	Dial Pointer	35E13	



DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SK7	0V.	25VAC	0V.	−.4VDC	0V.	40VDC	38VAC	55VDC
2	12SA7	0V.	25VAC	82VDC	82VDC	−11VDC§	0V.	12VAC	−.3VDC
3	12SK7	0V.	38VAC	0V.	−.4VDC	0V.	82VDC	50VAC	82VDC
4	12SQ7	0V.	−.6VDC	0V.	−.5VDC	−.5VDC	42VDC	0V.	12VAC
5	35L6GT	0V.	50VAC	103VDC	82VDC	0V.	0V.	88VAC	4.7VDC
6	35Z5GT	0V.	117VAC	113VAC	0V.	110VAC	0V.	88VAC	112VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SK7	0Ω*	24Ω	0Ω	4 Meg.	0Ω	90KΩ	38Ω	48KΩ
2	12SA7	0Ω*	24Ω	40KΩ	40KΩ	22KΩ	.8Ω	12Ω	220KΩ
3	12SK7	0Ω*	38Ω	0Ω	4 Meg.	0Ω	40KΩ	52Ω	40KΩ
4	12SQ7	0Ω*	3 Meg.	0Ω	500KΩ	500KΩ	510KΩ	0Ω	12Ω
5	35L6GT	0Ω*	52Ω	40KΩ	40KΩ	500KΩ	INF.	67Ω	150Ω
6	35Z5GT	INF.	115Ω	112Ω	INF.	160Ω	INF.	87Ω	40KΩ

*220KΩ on Underwriters approved models.

RADIO-PHONO SWITCH IN RADIO POSITION.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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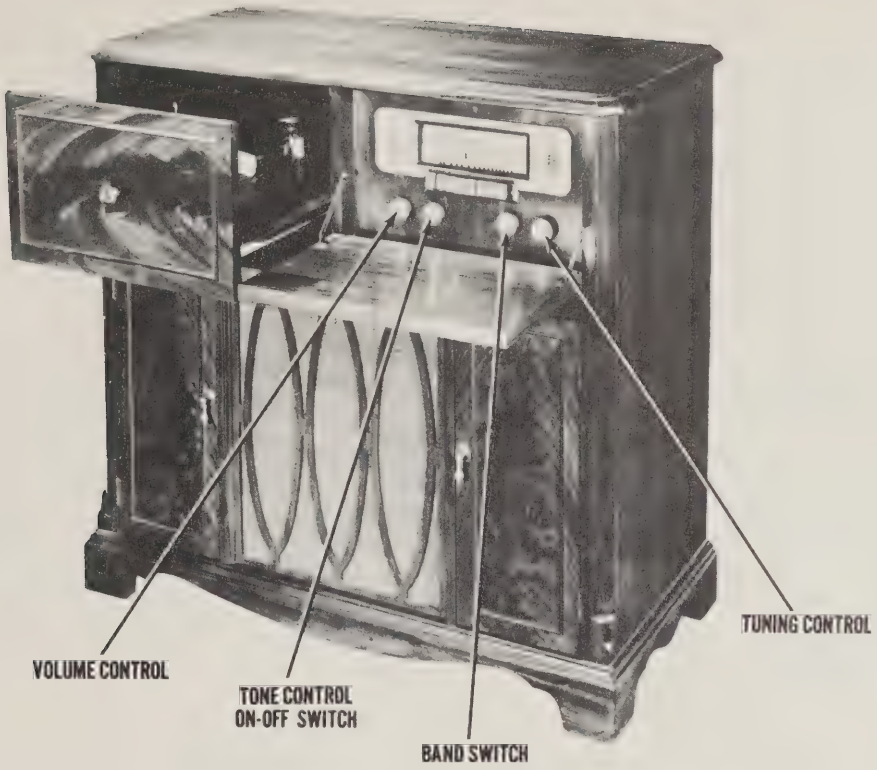
The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

SILVERTONE MODELS 6106A
(Ch. 101.662-4E), 6111A (Ch. 101.662-5F)



SILVERTONE MODELS 6106A
(Ch. 101.662-4E), 6111A (Ch. 101.662-5F)

SILVERTONE MODEL 6111A (Ch. 101.662-5F)

TRADE NAME	Silvertone, Models 6106A (Ch. 101.662-4E), 6111A (Ch. 101.662-5F)
SUPPLIER	Sears, Roebuck & Co., 925 S. Homan St., Chicago, Ill.
TYPE SET	AC Operated Combination Phono-Radio 2 Band Superheterodyne with Loop Antenna
TUBES (EIGHT)	Types, 7E6 Osc.-Bias Control, 7H7 Mixer, 6SK7GT IF Amp., 6SQ7GT Det.-AVC-AF, 6SQ7GT Phase Inv., (2) 6K6GT Power Output, 5Y3GT Rectifier.
POWER SUPPLY	110-120 Volts AC
TUNING RANGE—BROADCAST	540-1700KC
RATING	630 Amp. @ 117 Volts AC
SHORT WAVE	6-18MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low freq. end of dial. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	high side to Pin 6 (grid) 7H7. Low side to chassis.	455KC	BC (counter-clock-wise)	Tuning cap. fully closed	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output
2	200MMFD	High side to ext. ant. terminal. Low side to chassis.	1750KC	"	Tuning cap. fully open.	"	A5	" " " "
3	"	"	1410KC	"	Tune for maximum output.	"	A6,A7	" " " "
4	"	"	600KC	"	"	"	A8	Rock tuning cap. and adjust for maximum output. Repeat Steps 2, 3 & 4 until no further improvement can be made.
5	400Ω carbon res.	"	18.3MC	SW (clock-wise)	Tuning cap. fully open.	"	A9	Adjust for maximum output.
6	"	"	15MC	"	Tune for maximum output.	"	A10	Rock tuning cap. and adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		SILVERTONE PART No.	STANDARD REPLACEMENT		
1	Osc.-Bias Control	7E6	7E6	8W	
2	Mixer	7H7	7H7	8Y	
3	IF Amp.	6SK7GT	6SK7GT	8N	
4	Det.-AVC-AF	6SQ7GT	6SQ7GT	8Q	
5	Phase Inv.	6SQ7GT	6SQ7GT	8Q	
6	Power Output	6K6GT	6K6GT	7S	
7	Power Output	6K6GT	6K6GT	7S	
8	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

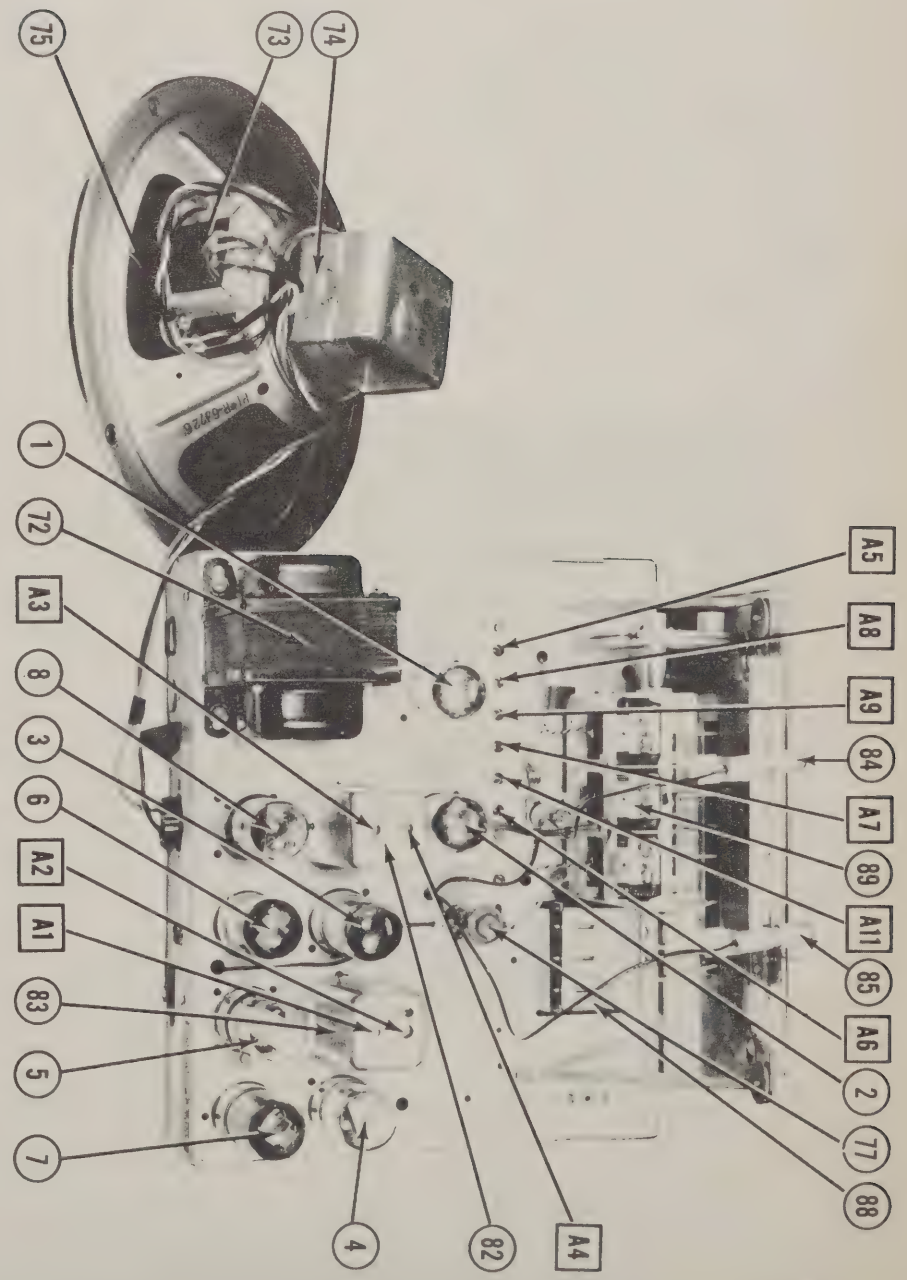
Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	SILVERTONE PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	
9	40	450	R61272	TC78	M-40-450	UT-40	PRS450-40	BR4045	Filter
10A	30	375	R45829	TC77	M-30-450	UT-30	PRS450-30	BR3045	" - Yellow
B	30	275		TC77	M-30-450	UT-30	PRS450-30	BR3045	" - Red
11	.002	600		TP405	S-6-002	TC-22	684-002	DT6D2	Output Plate Bypass
12	.002	600		TP405	S-6-002	TC-22	684-002	DT6D2	" " "
13	.1	400		TP428	S-4-1	TC-1	484-.1	DT4P1	Phase Inv. Plate Bypass
14	.01	600		TP410	S-6-01	TC-11	684-01	DT6S1	Audio Coupling
15	.005	600		TP408	S-6-005	TC-25	684-005	DT6D5	" "
16	.01	400		TP421	S-4-01	TC-11	484-01	DT4S1	Tone Comp.
17	.1	400		TP428	S-4-1	TC-1	484-.1	DT4P1	AF Plate Decoup.
18	.1	400		TP428	S-4-1	TC-1	484-.1	DT4P1	RF Bypass Pwr. Supply
19	.005	600		TP408	S-6-005	TC-25	684-005	DT6D5	Tone Comp.
20	.01	400		TP421	S-4-01	TC-11	484-01	DT4S1	Audio Coupling
21	.002	600		TP405	S-6-002	TC-22	684-002	DT6D2	" "
22	.008	400		TP450			484-0075		Tone Comp.
23	.003	400		TP406	S-6-003	TC-23	684-003	DT6D3	" "
24	.1	400		TP428	S-4-1	TC-1	484-.1	DT4P1	IF Screen Decoup.
25	.1	600		TP418	S-6-1	TC-1	684-.1	DT6P1	AVC Filter
26	.1	200		TP428	S-4-1	TC-1	484-.1	DT4P1	IF Cathode Bypass
27	.1	400		TP428	S-4-1	TC-1	484-.1	DT4P1	Mixer Screen Bypass
28	.1	400		TP428	S-4-1	TC-1	484-.1	DT4P1	Mixer Plate Decoupling
29	.01	400		TP421	S-4-01	TC-11	484-01	DT4S1	Osc. Plate Decoupling
30	.05	200		TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter
31	.05	200		TP426	S-4-05	TC-15	484-05	DT4S5	RF Coupling
32	100	500		MC235	MO.5-31	1FM-31	1468-0001	5W5T1	AF Plate Bypass
33	100	500		MC235	MO.5-31	1FM-31	1468-0001	5W5T1	AVC Coupling
34	500	500		MC245	MO.5-35	1FM-35	1468-0005	5W5T5	Tone Comp.
35	50	500		MC225	MO.5-45	1FM-45	1468-00005	5W5Q5	" "
36	100	500		MC235	MO.5-31	1FM-31	1468-0001	5W5T1	Osc. Grid
37	4000			MC463	M.5-24	1FM-24	1467-004	1D5D4	Fixed Pad
38	100	500		MC235	MO.5-31	1FM-31	1468-0001	5W5T1	Bias Filter

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	SILVERTONE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
39A	2 Meg.	½	R47240	DTM296	D13-139XA		Volume Control
B	Shaft		Not Req.	SS1	A		Attach to 39A per instructions
40A	1 Meg.	½	R47235	UM159	D14-137		Tone Control
B	Shaft		Not Req.	SS1	A		Attach to 40A per instructions
C	Switch		" "	M26	41		" " " " "

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	SILVERTONE PART No.	IRC PART No.	
41	1000Ω	1/3		BTS-1000	Br.-Blk.-Red Mixer Grid
42	1 Meg.	1/3		BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
43	1 Meg.	1/3		BTS-1 Meg.	Br.-Blk.-Grn. " "
44	47Ω	1/3		BW-½-47	Yl.-Vl.-Blk. Oscillator Cathode
45	100Ω	1/3		BW-½-100	Br.-Blk.-Br. Parasitic Suppressor
46	2.2KΩ	1/3		BTS-22K	Red-Red-Or. Oscillator Grid
47	100Ω	1/3		BW-½-100	Br.-Blk.-Br. Parasitic Suppressor
48	1.2KΩ	1/3		BTS-120K	Br.-Red-Yl. Screen Dropping
49	8200Ω	1		BTA-8200	Gray-Red-Red Plate Decoupling
50	10KΩ	1/3		BTS-10K	Br.-Blk.-Or. Mixer Plate Decoupling
51	270Ω	1/3		BW-½-270	Red-Vl.-Br. IF Cathode
52	27KΩ	1/3		BTS-27K	Red-Vl.-Or. Tone Compensation
53	220KΩ	1/3		BTS-220K	Red-Red-Yl. " "
54	56KΩ	1/3		BTS-56K	Grn.-Blue-Or. " "
55	1 Meg.	1/3		BTS-1 Meg.	Br.-Blk.-Grn. " "
56	560KΩ	1/3		BTS-560K	Grn.-Blue-Yl. Series Phono
57	15 Meg.	1/3		BTS-15 Meg.	Br.-Grn.-Blue AF Grid
58	1 Meg.	1/3		BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
59	82KΩ	1/3		BTS-82K	Gray-Red-Or. IF Screen Dropping
60	1 Meg.	1/3		BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
61	100KΩ	1/3		BTS-100K	Br.-Blk.-Yl. AF Plate Load
62	33KΩ	1/3		BTS-33K	Or.-Or.-Or.- AF Plate Decoupling
63	3300Ω	1		BTA-3300	Or.-Or.-Red Decoupling
64	180KΩ	1/3		BTS-180K	Br.-Gray-Yl. Phase Inverter Plate
65	33KΩ	1/3		BTS-33K	Or.-Or.-Or. Phase Inverter Plate Decoupling
66	47KΩ	1/3		BTS-47K	Yl.-Vl.-Or. Phase Inverter Grid
67	270KΩ	1/3		BTS-270K	Red-Vl.-Yl. Output Grid
68	330KΩ	1/3		BTS-330K	Or.-Or.-Yl. Output Grid
69	100Ω	1		BW-1-100	Br.-Blk.-Br. Output Cathode
70	820Ω	2		BT-2-820	Gray-Red-Br. Filter
71	300Ω	5		AB-300	Or.-Blk.-Br. Surge Limiter

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	SILVERTONE PART No.	STANCOR PART No.	THORDARSON PART No.	
72	117V AC @ .63A	630V CT @ .08A	5.3V AC @ 1.8A	6.5V AC @ 2.7A	R45953	P-6312†	T22R04	P-3152‡

†Mount vertically with universal mounting bracket. ‡Drill new mounting holes.

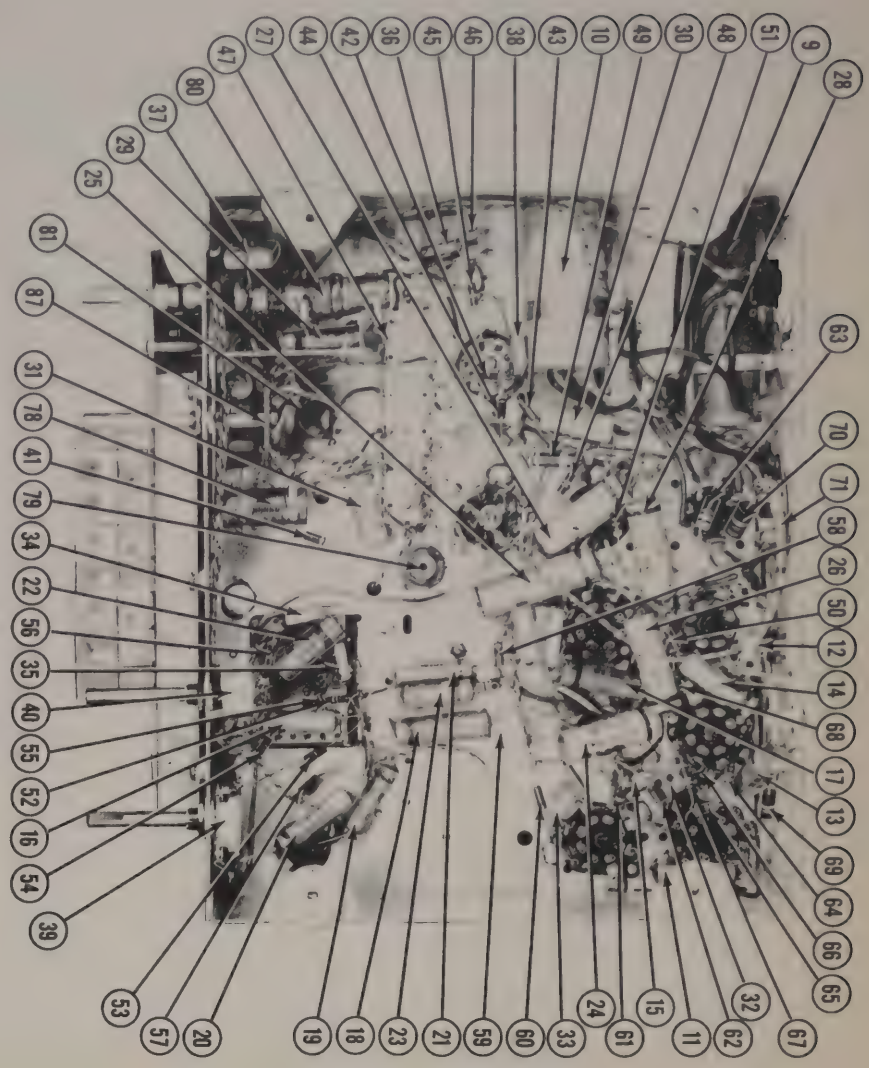
TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		SILVERTONE PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
73	13600Ω CT	3.5Ω	600Ω CT	.35Ω	R45837	A-2823	T22S48†	A-2904	†Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			SILVERTONE PART No.	JENSEN PART No.		
74	FIELD	VC IMP.		ST-120*		*Replace output transformer to match 6-8Ω voice coil.
	PM	3.5Ω	R61260	Mod. P10-S		
	CONE DIA.	VC DIA.				
75	9-3/4"	1"	R61036			

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	SILVERTONE PART No.	MEISSNER PART No.	
76A	Loop Ant.	.1Ω	.3Ω	R57196		Used in Model 6111A
B	" "			R57216		Used in Model 6106A
77	Loop Load. Coil		2.5Ω	R47193		
78	SW Ant.Coil	.5Ω	.1Ω	R47195	14-1044	
79	BC Mixer Coil		2.2Ω	R47194		
80A	BC Osc.Coil		5Ω	R47192		Items 80A & 80B are wound on same form.
B	SW Osc.Coil	.5Ω	.1Ω			
81	Coupling Coil		.1Ω	R57187		
82	Input IF	14Ω	14Ω	R45305	16-6658	
83	Output IF	16Ω		R45306	16-6670	Add 150KΩ from low side sec. to ground

DIAL LIGHT

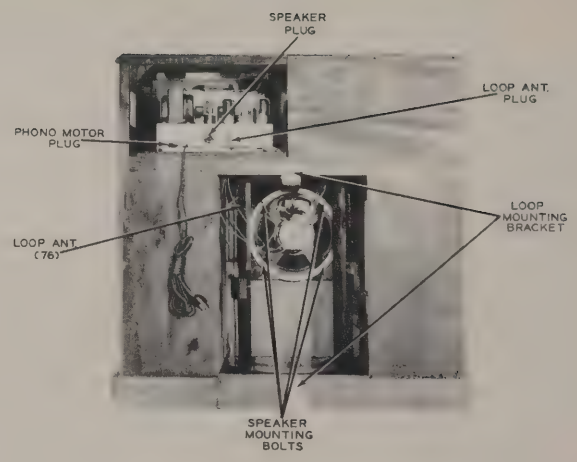
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					SILVERTONE PART No.		
84	Bayonet	6-8	0.25A	Blue			Type 44
85	"	"	"	"			" "

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA		REMARKS
	SILVERTONE PART No.	ASTATIC PART No.	
86		L-70-S	

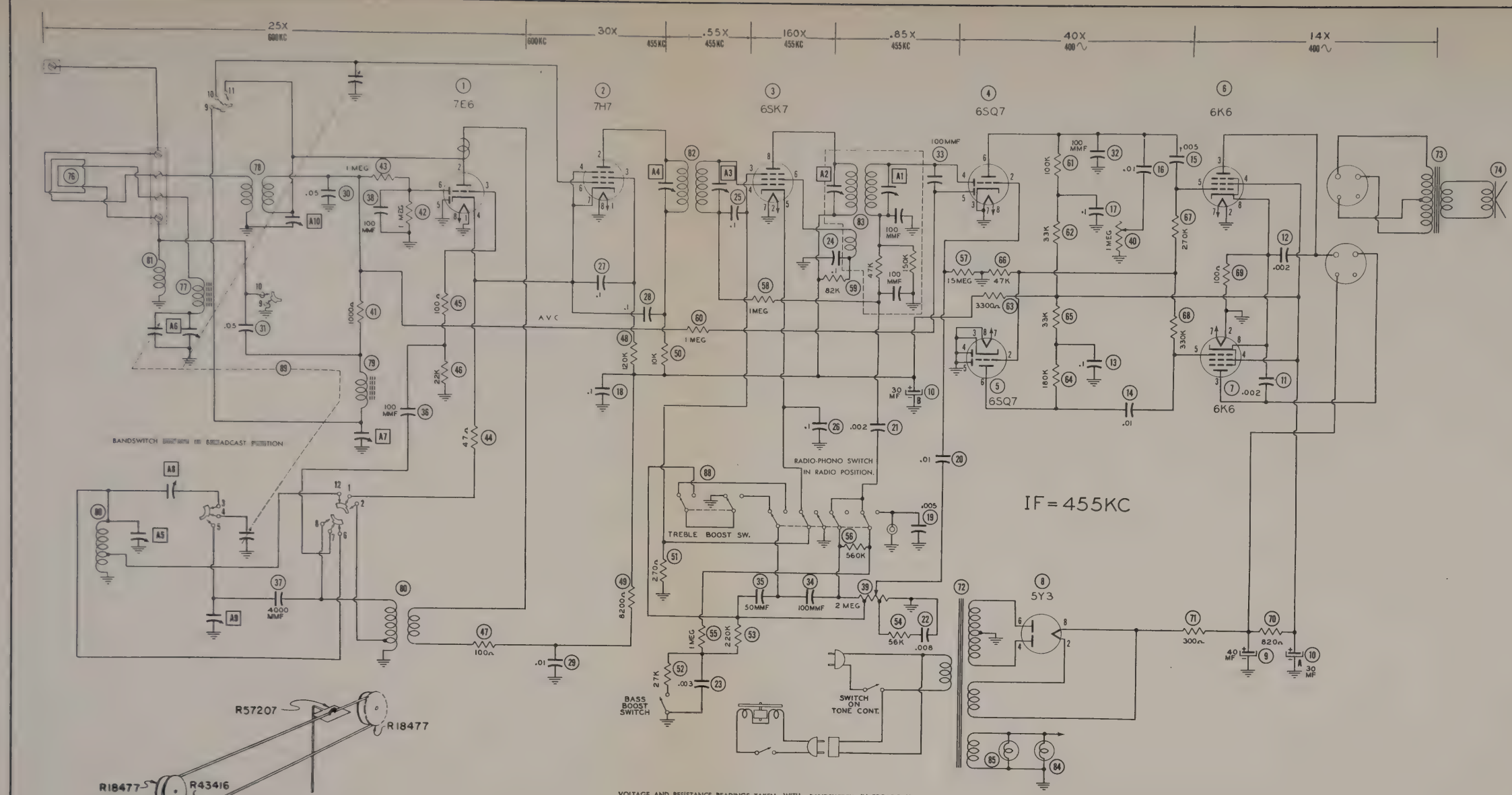
MISCELLANEOUS

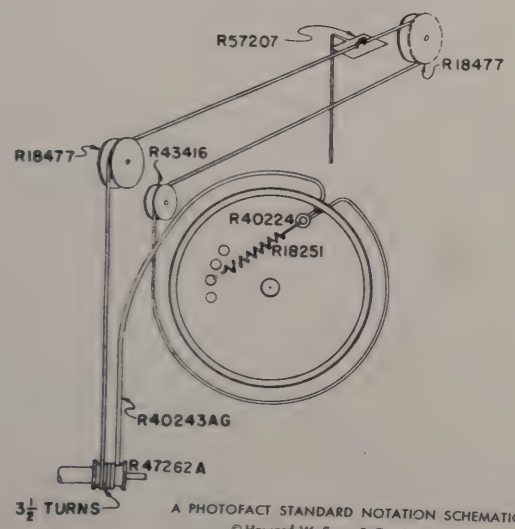
ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
87	Band Switch	R47191	
88	Switch	R45844	Tone-Phono-Radio
89	3 Gang Var. Cap.		(11-478 MMF, 11-478 MMF, 11-478MMF)
A5			BC Osc. Adj.
A6			BC RF Adj.
A7	Trimmer Strip	R47199	BC Ant. Adj.
A8			BC Osc. Padder
A9			SW Osc. Adj.
A10			SW Ant. Adj.
	Escutcheon	R57231	Dial with Glass
	Dial Pointer	R57207	



DISASSEMBLY INSTRUCTIONS

1. Remove four push-on type control knobs.
2. Remove phono-motor plug from chassis.
3. Remove phono-pickup plug from chassis.
4. Remove loop leads from chassis.
5. Remove speaker plug from chassis.
6. Remove two nails from rear of chassis.
7. Remove four screws holding chassis in cabinet. Remove chassis from cabinet.
8. Remove loop antenna from cabinet.
9. Remove four hex nuts holding speaker in cabinet. Remove speaker from cabinet.





A PHOTOFACT STANDARD NOTATION SCHEMATIC

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VOLTAGE AND RESISTANCE READINGS TAKEN WITH BANDSWITCH IN BROADCAST POSITION AND RADIO-PHONO SWITCH IN RADIO POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7E6	0V.	105VDC	-.9VDC§	.4VDC	0V.	-2.9VDC	.4VDC	6.5VAC
2	7H7	6.5VAC	150VDC	65VDC	.4VDC	0V.	-2.9VDC	.4VDC	0V.
3	6SK7GT	0V.	6.5VAC	1.6VDC	-.1VDC	1.6VDC	62VDC	0V.	162VDC
4	6SQ7GT	0V.	-.9VDC	0V.	-.7VDC	-.4VDC	132VDC	0V.	6.5VAC
5	6SQ7GT	0V.	-.7VDC	0V.	0V.	0V.	67VDC	6.5VAC	0V.
6	6K6GT	0V.	0V.	220VDC	220VDC	-.2VDC	190VDC	6.5VAC	8.4VDC
7	6K6GT	0V.	0V.	220VDC	220VDC	-.2VDC	190VDC	6.5VAC	8.4VDC
8	5Y3GT	0V.	260VDC	210VDC	315VAC	0V.	315VAC	160VDC	260VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7E6	0Ω	70KΩ	22KΩ	44Ω	0Ω	900KΩ	44Ω	.1Ω
2	7H7	.1Ω	70KΩ	180KΩ	44Ω	0Ω	2 Meg.	44Ω	0Ω
3	6SK7GT	0Ω	.1Ω	270K	1.2 Meg.	270Ω	140KΩ	0Ω	60KΩ
4	6SQ7GT	0Ω	15 Meg.	0Ω	3 Meg.	150KΩ	195KΩ	.1Ω	.1Ω
5	6SQ7GT	0Ω	45KΩ	0Ω	0Ω	0Ω	275KΩ	.1Ω	0Ω
6	6K6GT	0Ω	0Ω	60KΩ	60KΩ	320KΩ	60KΩ	.1Ω	85Ω
7	6K6GT	0Ω	0Ω	60KΩ	60KΩ	440KΩ	60KΩ	.1Ω	85Ω
8	5Y3GT	0Ω	60KΩ	60KΩ	150Ω	INF.	160Ω	60KΩ	60KΩ

§TAKEN WITH VACUUM TUBE VOLTMETER.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

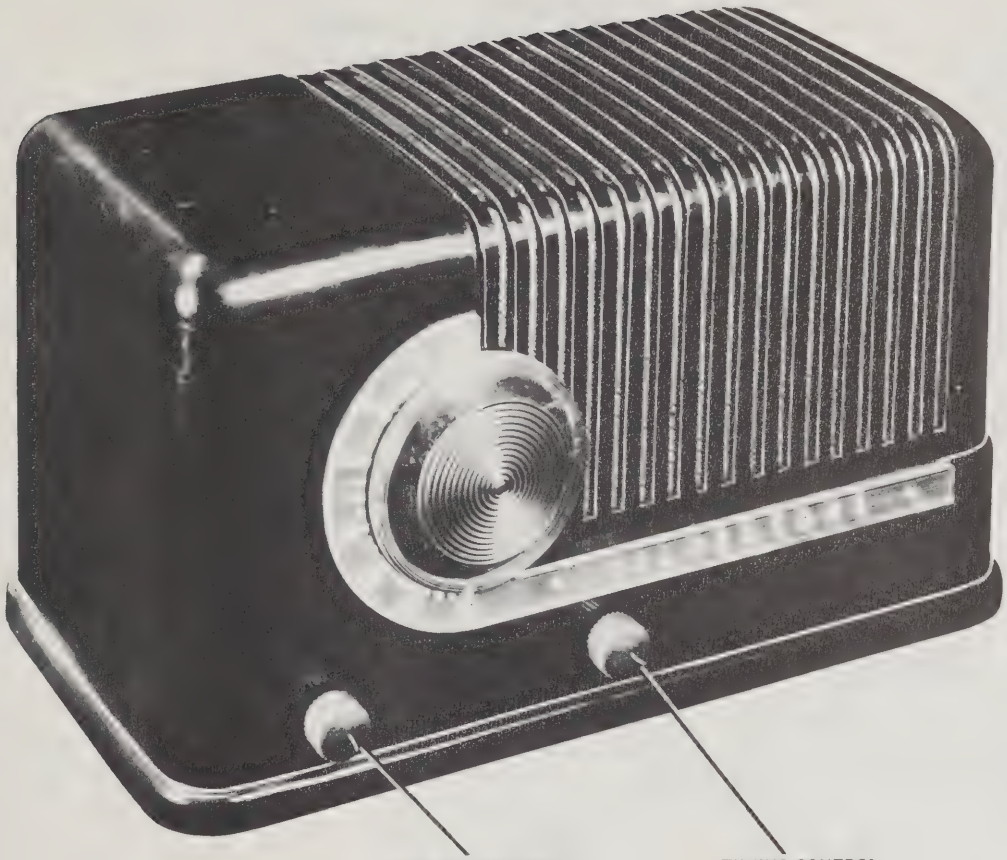
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. **DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.**
2. **Socket connections are shown as bottom views.**
3. **Measured values are from socket pin to common negative.**
4. **Line voltage maintained at 117 volts for voltage readings.**
5. **Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.**
6. **Volume control at maximum, no signal applied for voltage measurements.**

4719-23

SILVERTONE MODEL
7025 (Ch. 132.807-2)



SILVERTONE MODEL
7025 (Ch. 132.807-2)

SILVERTONE MODEL 7025

TRADE NAME	Silvertone, Model 7025 (Ch. 132.807-2)
SUPPLIER	Sears, Roebuck & Co., 925 S. Homan St., Chicago, Ill.
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Ant.
TUBES(FIVE)	Types, 12SA7GT Converter, 12SK7GT IF Amp., 12SQ7GT Det.-AVC-AF, 35L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	110-120 Volts AC-DC
TUNING RANGE—BROADCAST	540-1620KC RATING .320 Amps. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not, connect a .1 MFD capacitor in series with low side of signal generator and B-. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin 8 (grid) 12SA7. Low side to B-.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD. to reduce hum modulation.
2	50MMFD.	High side to ext. ant. clip.(Shorting wire disconnected) Low side to chassis.	1620KC	"	"	A5	Adjust for maximum output.
3	50MMFD.	"	1400KC	Tune for maximum output.	"	A6	" " " "

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DATE 12/47 SET #29 FOLDER #4719-24

PARTS LIST AND DESCRIPTIONS

SILVERTONE MODEL 7025
(Ch. 13J,807-2)

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12SA7GT	12SA7GT	8AD	
2	IF Amp.	12SK7GT	12SK7GT	8N	
3	Det.-AVC-AF	12SQ7GT	12SQ7GT	8Q	
4	Power Output	35L6GT	35L6GT	7AC	
5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SILVERTONE PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	40	150	N16707	FP3061	DY-4020-150	EL-24	AF84D4A†	UP4215	■ Filter
B	20	150							▲ "
7	.05	400		TP426	MPH-4-05	TC-15	484-05	DT4S5	Line Filter
8	.02	400		TP423	S-4-02	TC-12	484-02	DT4S2	Output Plate Bypass
9	.002	600		TP405	S-6-002	TC-22	684-002	DT6D2	Audio Coupling
10	.0005	400		TP403	S-6-0005	TC-35	1468-0005	DT6T5	AF Plate Bypass
11	.002	600		TP405	S-6-002	TC-22	684-002	DT6D2	Audio Coupling
12	.05	400		TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter
13	.2	400		TP429	S-4-2	TC-2	484-.2	DT4P2	Line Isolation
14	.01	400		TP421	S-4-01	TC-11	484-01	DT4S1	Ext. Ant. Isolation
15	250	500		MC240	MO.5-325	1FM-325	1468-00025	5W5T25	Diode RF Filter
16	50	500		MC225	MO.5-45	1FM-45	1468-00005	5W5Q5	Osc. Grid

†Do not use bypass section.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SILVERTONE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
17A	1 Meg.	½	N16671	MR53	D13-137	M-63-Z	Volume Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 17A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

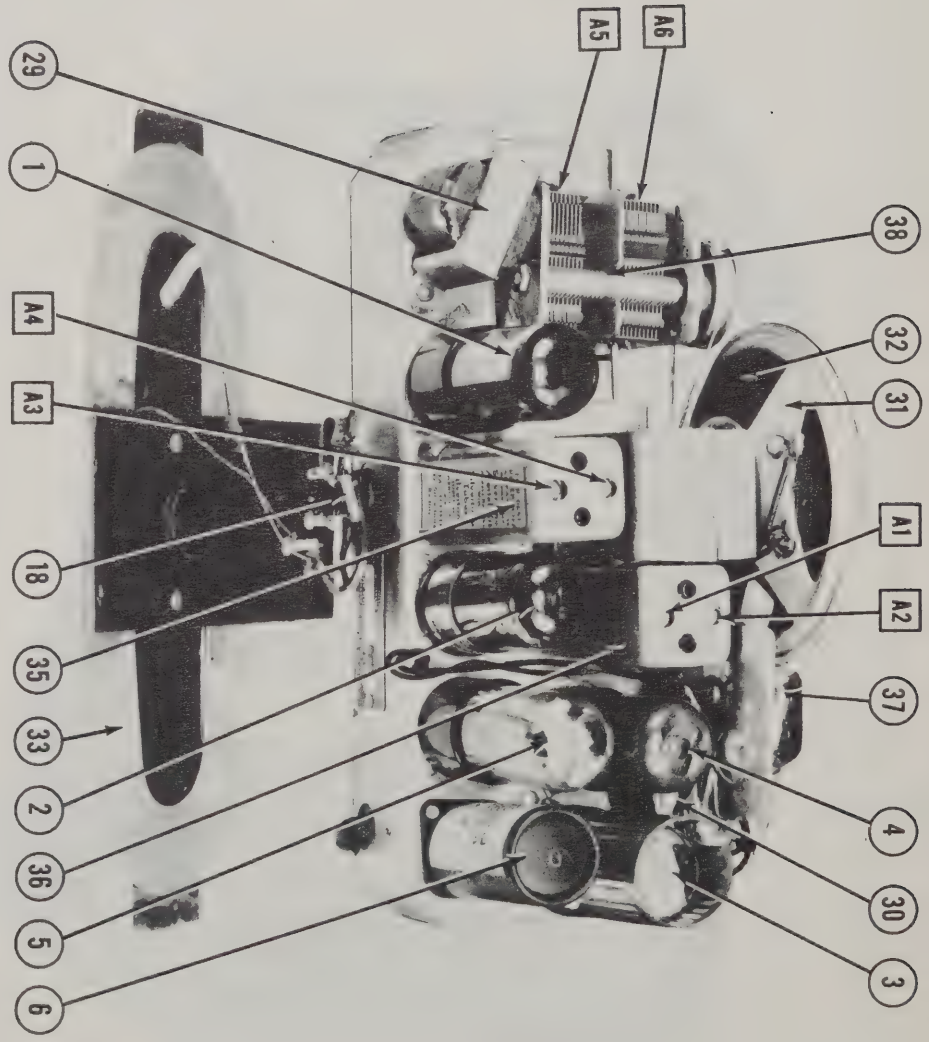
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SILVERTONE PART No.	IRC PART No.	IDENTIFICATION CODES
18	10KΩ	¼		BTS-10K	Br.-Blk.-Or. Antenna Loading
19	10 Meg.	¼		BTS-10 Meg.	Br.-Blk.-Blue AVC Network
20	20KΩ	¼		BTS-22K	Red-Blk.-Or. Oscillator Grid
21	2 Meg.	¼		BTS-2.2 Meg.	Red-Blk.-Grn. AVC Network
22	15 Meg.	¼		BTS-15 Meg.	Br.-Grn.-Blue AF Grid
23	500KΩ	¼		BTS-470K	Grn.-Blk.-Yl. AF Plate Load
24	500KΩ	¼		BTS-470K	Grn.-Blk.-Yl. Output Grid
25	150Ω	¼		BW-½-150	Br.-Grn.-Br. Output Cathode
26	12KΩ	1		BTA-12K	Br.-Red-Or. Bleeder
27	30Ω	¼		BW-½-33	Or.-Blk.-Blk. Surge Limiter
28	52Ω	2.5	N14364	BW-2-56	Filament Dropping

FILTER CHOKE

ITEM NO.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D. C. RESISTANCE	RATINGS: INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA: SILVERTONE PART NO.	STANCOR PART NO.	THORDARSON PART NO.		INSTALLATION NOTES
29	.031A	380Ω	6 Henries	N16684	C-1706*	T20C52*	C-2975*	*Drill one new mounting hole.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		SILVERTONE PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
30	2600Ω	4.1Ω	110Ω	.4Ω	N16685	A-3876	T22345	A-2928	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			SILVERTONE PART No.	JENSEN PART No.		
	FIELD	VC IMP.				
31	PM	4.1Ω	N16993			
	CONE DIA.	VC DIA.				
32	4"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

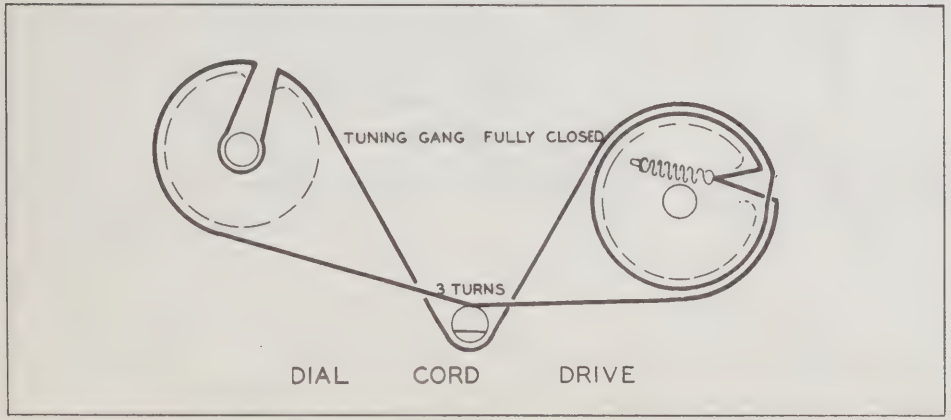
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	SILVERTONE PART No.	MEISSNER PART No.	
33	Loop Ant.	13Ω	1.5Ω	N16680		
34	Osc. Coil	1Ω	6Ω	N17233	14-1040	
35	Input IF	15Ω	15Ω	N17283	16-6666	
36	Output IF	15Ω	15Ω	N16683	16-6667	

DIAL LIGHT

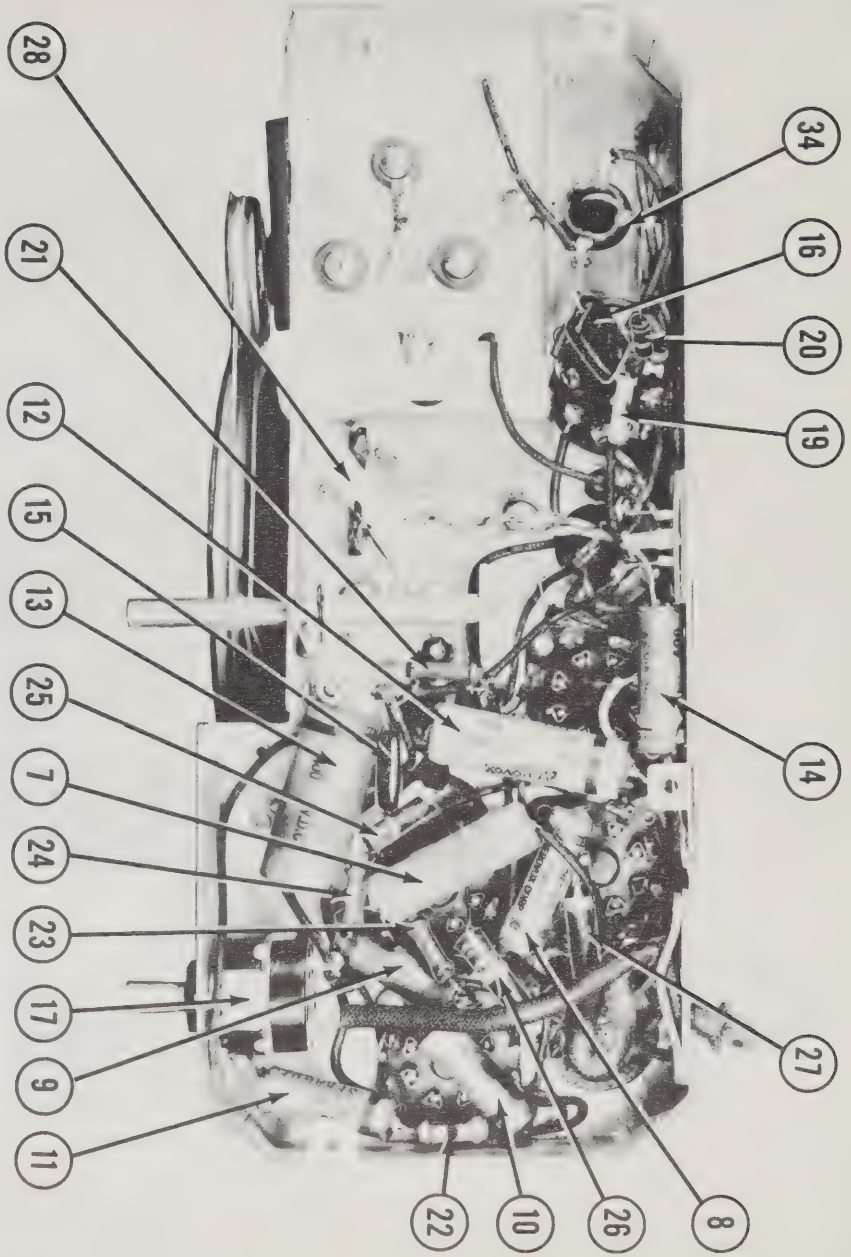
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					SILVERTONE PART No.		
37	Screw	117					Type C7

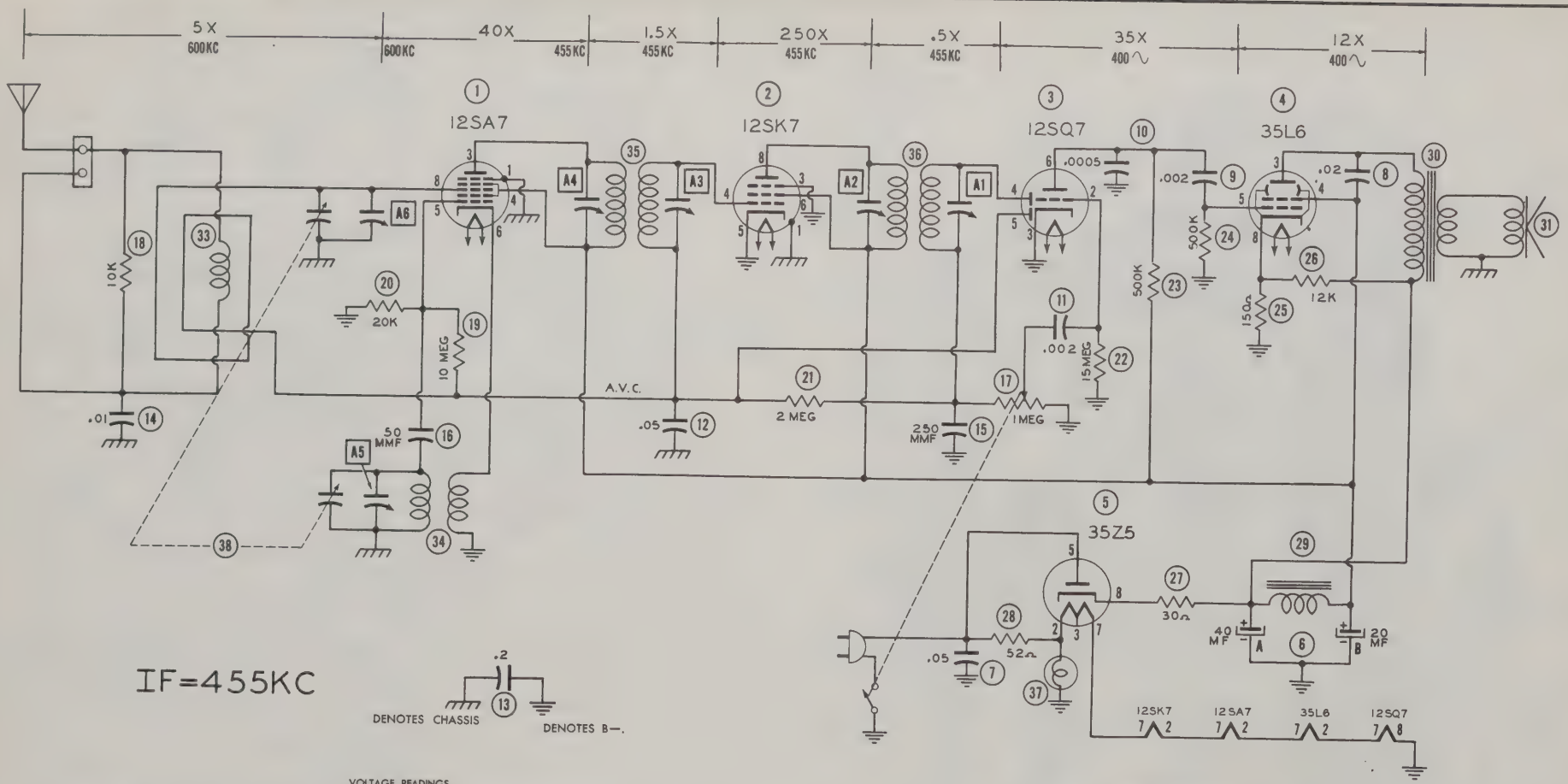
MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
38	2 Gang Var. Cap.	N17250	(27-429MMF, 27-189 MMF)
	Dial	N17254	Scale and Nameplate
	"	N16658	Pointer



CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7GT	0V.	49VAC	102VDC	102VDC	-4.4VDC§	0V.	60VAC	-.5VDC
2	12SK7GT	0V.	60VAC	0V.	-.5VDC	0V.	102VDC	70VAC	102VDC
3	12SQ7GT	0V.	-1VDC	0V.	-.5VDC	-.5VDC	63VDC	12VAC	0V.
4	35L6GT	0V.	12VAC	107VDC	102VDC	0V.	0V.	49VAC	6.2VDC
5	35Z5GT	0V.	105VAC	98VAC	0V.	117VAC	0V.	70VAC	113VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7GT	INF.	38Ω	12KΩ	12KΩ	20KΩ	.5Ω	46Ω	3 Meg.
2	12SK7GT	INF.	46Ω	0Ω	3 Meg.	0Ω	12KΩ	54Ω	12KΩ
3	12SQ7GT	INF.	15 Meg.	0Ω	1 Meg.	3 Meg.	510KΩ	12Ω	0Ω
4	35L6GT	INF.	12Ω	12KΩ	12KΩ	500KΩ	0Ω	38Ω	120Ω
5	35Z5GT	INF.	70Ω	65Ω	0Ω	120Ω	INF.	54Ω	12KΩ

§TAKEN WITH VACUUM TUBE VOLTMETER.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

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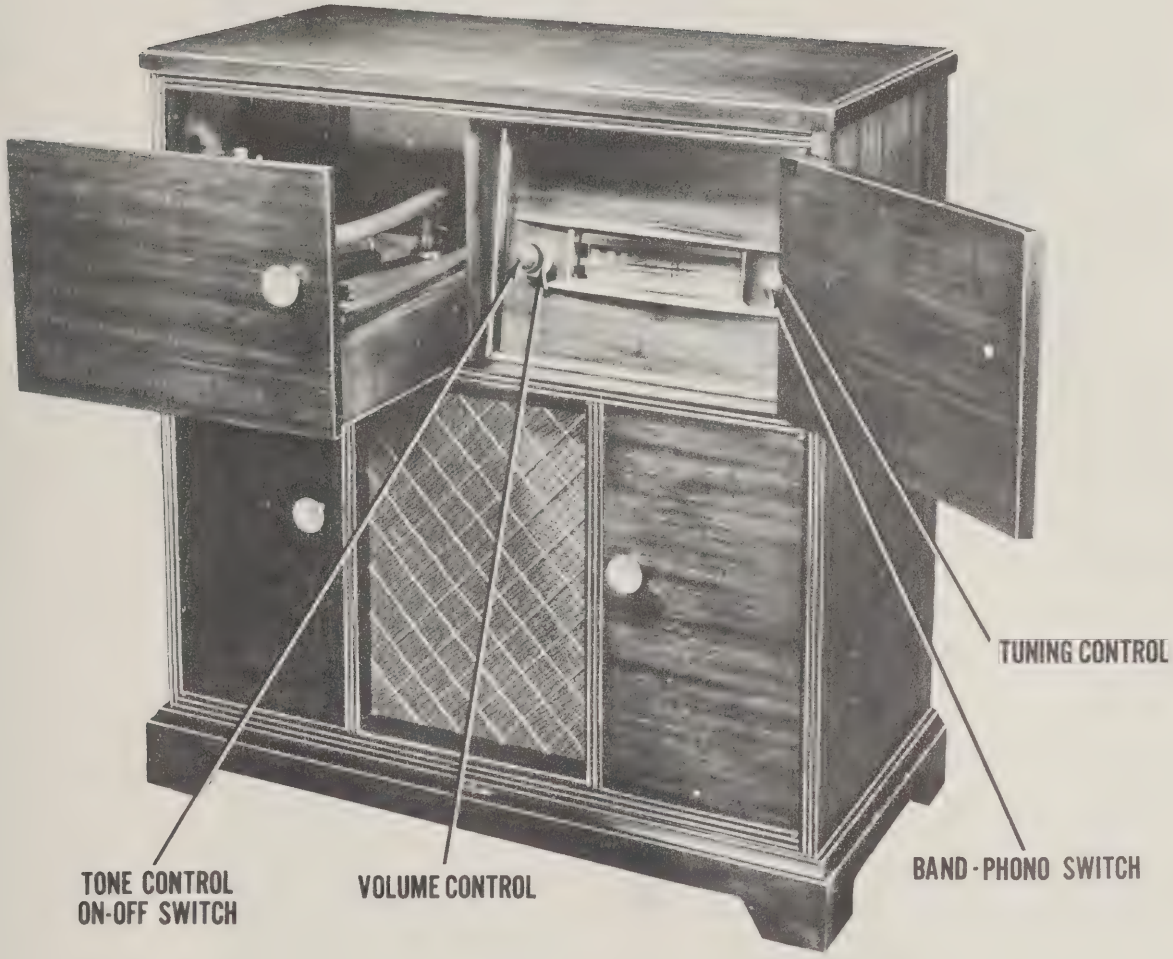
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

4719-24

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

SPARTON MODELS 1005,
1006, 1007, 1008 (Ch. 8-57)



SPARTON MODELS 1005, PAGE 1
1006, 1007, 1008 (Ch. 8-57)

SPARTON MODEL 1006

TRADE NAME	Sparton, Models 1005, 1006, 1007, 1008 (Ch. 8-57)
MANUFACTURER	Sparks-Withington Co., Jackson, Mich.
TYPE SET	AC Operated AM-FM Combination Phono-Radio Superheterodyne with Loop Ant.
TUBES (EIGHT)	Types, 6BA6 RF Amp., 6BE6 Converter, 7A7 AM-FM IF Amp., 7A7 FM 2nd IF Amp., 7C7 FM 3rd IF Amp., 6S8GT Det.-AVC-AF, 7B5 Power Output, 5Y3GT Rectifier.
POWER SUPPLY	110-120 Volts AC
RATING	.560 Amps. @ 117 Volts AC
TUNING RANGE - BROADCAST	540-1620KC FREQ. MOD. - 87.5-109MC

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"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
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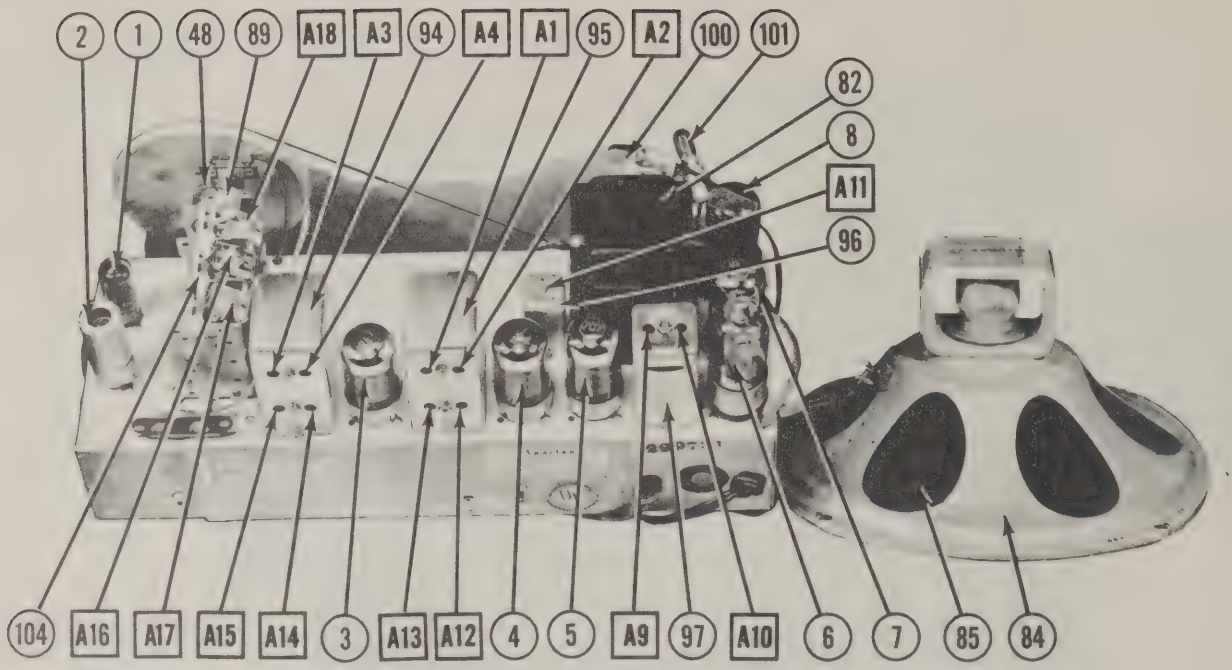
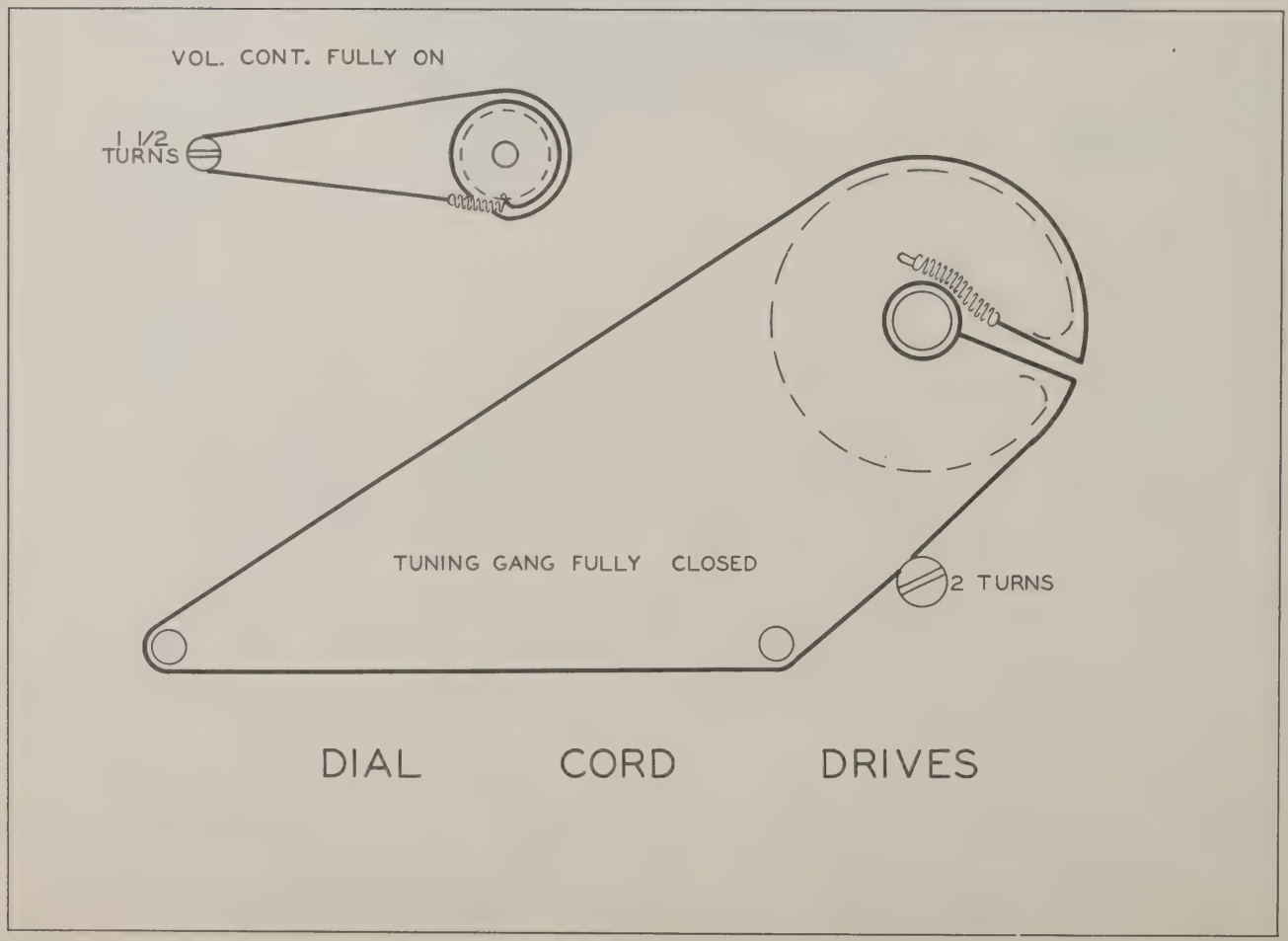
DATE 12/47 SET #29 FOLDER #4719-25

CHASSIS—TOP VIEW





DIAL CORD DRIVES

SPARTON MODELS 1005, PAGE 3
1006, 1007, 1008 (Ch. 8-57)

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: SPARTON PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6BA6	6BA6	7BK	
2	Converter	6BE6	6BE6	7CH	
3	AM-FM-IF Amp.	7A7	7A7	8V	
4	FM 2nd IF Amp.	7A7	7A7	8V	
5	FM 3rd IF Amp.	7C7	7C7	8V	
6	Det.-AVC-AF	6S8GT	6S8GT	8CB	
7	Power Output	7B5	7B5	6AE	
8	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SPARTON PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
9A	40	350	PA4302	FP238*	DY-2x40-450*	EL-240*	AF88J*	UP-4445*	Filter - Blue
B	40	350							" - Red
10	8	150	PA4303-6	TC42	M-8-150	UT-81	PRS-150-8	BR815	Stabilizing Capacitor
11	20	25	PA4303-2	TC26	M-25-25	TA-25	PRS-25-25	BR202A	Output Cathode Bypass
12	.006	1000	PC40GN-602	TP460	TM-16-006	TR-26	1084-006	MD16D6	Output Plate Bypass
13	.004	600	PC40GK-402	TP407	S-6-004	TC-24	684-004	DT6D4	Tone Compensation
14	.02	400	PC40GL-203	TP423	S-4-02	TC-12	484-02	DT4S2	Audio Coupling
15	.05	400	PC40GL-503	TP426	S-4-05	TC-15	484-05	DT4S5	AF Plate Decoupling
16	.02	200	PC40GK-203	TP423	S-4-02	TC-12	484-02	DT4S2	Audio Coupling
17	.001	400	PA4325-3	MC255	MO.3-21	1FM-21	1468-001	1W5D1	Diode Load Capacitor
18	.01	200	PC40GK-103	TP421	S-4-01	TC-11	484-01	DT4S1	3rd IF Cathode Bypass
19	.05	400	PC40GL-503	TP426	S-4-05	TC-15	484-05	DT4S5	3rd IF Screen Bypass
20	.01	400	PC40GL-103	TP421	S-4-01	TC-11	484-01	DT4S1	RF Bypass Power Supply
21	.05	400	PC40GK-503	TP426	S-4-05	TC-15	484-05	DT4S5	2nd IF Cathode Bypass
22	.001	200	PA4325-2	MC255	MO.3-21	1FM-21	1468-001	1W5D1	2nd IF Screen Bypass
23	.001	200	PA4325-2	MC255	MO.3-21	1FM-21	1468-001	1W5D1	AVC Filter
24	.02	400	PC40GK-203	TP423	S-4-02	TC-12	484-02	DT4S2	" "
25	.05	400	PC40GL-503	TP426	S-4-05	TC-15	484-05	DT4S5	RF Bypass Power Supply
26	.01	400	PC40GL-103	TP421	S-4-01	TC-11	484-01	DT4S1	1st IF Plate Decoupling
27	.05	200	PC40GK-503	TP426	S-4-05	TC-15	484-05	DT4S5	1st IF Cathode Bypass
28	.001	200	PA4325-2	MC255	MO.3-21	1FM-21	1468-001	1W5D1	1st IF Screen Bypass
29	.05	400	PC40GL-503	TP426	S-4-05	TC-15	484-05	DT4S5	3rd IF Plate Decoupling
30	.01	200	PC40GK-103	TP421	S-4-01	TC-11	484-01	DT4S1	AVC Filter
31	.01	400	PC40GL-103	TP421	S-4-01	TC-11	484-01	DT4S1	Conv. Plate Decoupling
32	.001	200	PA4325-2	MC255	MO.3-21	1FM-21	1468-001	1W5D1	Conv. Screen Bypass
33	.001	200	PA4325-2	MC255	MO.3-21	1FM-21	1468-001	1W5D1	RF Screen Bypass
34	.01	200	PA4325-1						RF Cathode Bypass
35	.05	200	PC40GK-503	TP425	S-4-05	TC-15	484-05	DT4S5	Conv. Grid Filter
36	.001	200	PA4325-2	MC255	MO.3-21	1FM-21	1468-001	1W5D1	RF Filament Bypass
37	100	500	MC60G-101	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	Diode RF Filter
38	100	500	MC60G-101	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	" " "
39	100	500	MC60G-101	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	Phono Coupling
40	51	500	MC60G-510	MC225	MO.5-45	1FM-45	1468-00005	5W5Q5	Osc. Grid Capacitor
41	46		PA4328-2						FM RF Padder Cer. ± 2%
42	85		PA4328-6						FM Osc. Padder Cer. ± 1%
43	100	500	MC60G-101	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	IF Coupling
44	10		CC31H100K	MCB215	MOS.5-41	MS-41	1469-00001	5R5W1	FM Osc. Feedback Cer ± 10%
45	51		CC31H510K						Fixed Trimmer Cer. ± 10%
46	5		PA4328-5	MCB205	MOS.5-55	MS-55	1468-000005	5W5W5	RF Coupling Cer.
47	100	500	MC60G-101	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	De-emphasis
48	46		PA4328-2						FM Ant. Padder Cer. ± 2%
49	51	500	MC60G-510	MC225	MO.5-45	1FM-45	1468-00005	5W5Q5	RF Coupling

*Use mounting clip.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SPARTON PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
50A	500KΩ	½	PA4407-1	MR48	D13-133	M-60-Z	Volume Control-See Note 1
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 50A per instructions
51A	500KΩ	½	PA4400-7	MK401	D13-133	AM-60-Z	Tone Control-See Note 2
B	Shaft		Not Req.	Not Req.	E	KS3-3	Attach to 51A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

Note 1 - Use original pulley on volume control shaft.
Note 2 - Use original sleeve on tone control shaft.

PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

ITEM No.	USE	DC RES.: PRI.	DC RES.: SEC.	REPLACEMENT DATA: SPARTON PART No.	REPLACEMENT DATA: MEISSNER PART No.	
86	Loop Ant.		.3Ω	AC67008-1		
87	FM Ant.			PB41923		
88	Loop Load. Coil		2Ω	AA6780-2		
89A	FM Ant. Coil (Pri)		0Ω	AA6786-1		
B	FM Ant. Coil (Sec)		0Ω	AA6767-6		
90	BC RF Coil	70Ω	6Ω	AA6756-4	14-1027	
91	FM RF Coil		0Ω	AA6667-5		
92	BC Osc.Coil	1Ω	8Ω	AA6759-2		
93	FM Osc.Coil		0Ω	AA6767-4	14-1040	
94A	AM Input IF	10Ω	11Ω**	AA6768-3		Items 94A & 94B in same can
B	FM Input IF	1Ω				
95A	AM Output IF	11Ω#	10Ω	AA6768-4		Items 95A & 95B in same can
B	FM 2nd IF		1Ω			
96	FM Choke		1Ω	AA6785-2		
97	Ratio Det.	1.5Ω	1.5Ω	AA6734-3		
98	RF Choke		.1Ω	AA6769-2		
99	" "		0Ω	AA6798-1		

**Includes both sec. #Includes both pri.

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: SPARTON PART No.	REPLACEMENT DATA:	INSTALLATION NOTES
100	Bayonet	6-8	0.25	Blue			Type 44
101	"	"	"	"			"

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA: SPARTON PART No.	REPLACEMENT DATA: ASTATIC PART No.	REMARKS
102		L-71	

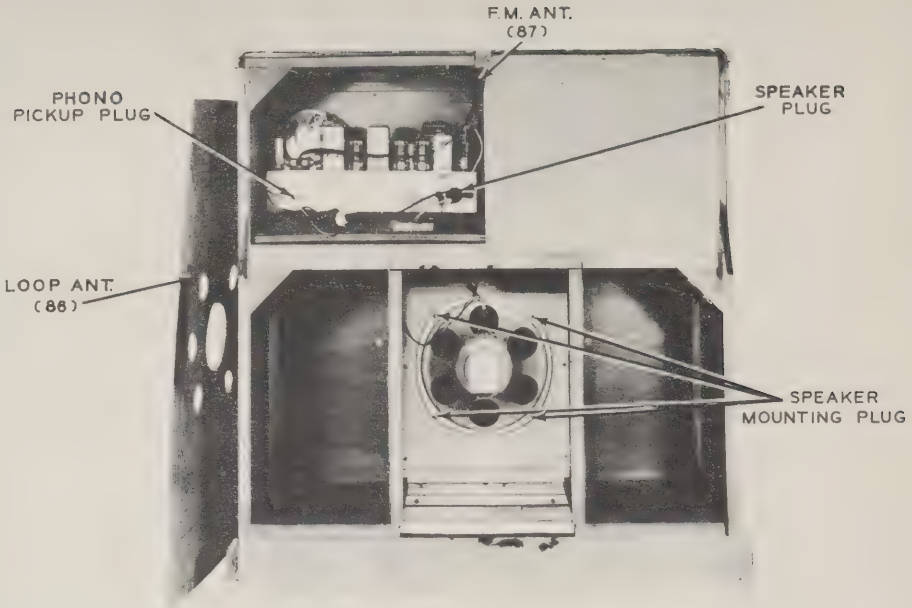
MISCELLANEOUS

ITEM No.	PART NAME	SPARTON PART No.	NOTES
103	Switch	PB42005	Band Phono
104	3 Gang Var.Cap.	PB40405	AM (18-418 MMF, 18-418 MMF, 18-418MMF)
A5	Trimmer	PA4352-3	AM Osc. Adj.
A6	"	PA4352-1	AM RF Adj.
A7	"	PA4352-1	AM Ant. Adj.
A8	Padder	PA4352-8	AM Osc. Adj.
A16	Trimmer	PA4379-1	FM Osc. Adj.
A17	"	PA4352-1	FM RF Adj.
A18	"	PA4352-1	FM Ant. Adj.

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	SPARTON PART No.	IRC PART No.	
52	1 Meg.	½	BR12S-105	BTS-1 Meg.	Br.-Blk.-Grn. RF Grid
53	68Ω	½	BR12S-680	BW-½-68	Blue-Gray-Blk. RF Cathode
54	33KΩ	½	BR12S-333	BTS-33K	Or.-Or.-Or. RF Screen Dropping
55	47Ω	1	CR12S-470	BW-1-47	Yl.-Vi.-Blk. Parasitic Suppressor
56	1 Meg.	½	BR12S-105	BTS-1 Meg.	Br.-Blk.-Grn. Converter Grid
57	22KΩ	½	BR12S-223	BTS-22K	Red-Red-Or. Oscillator Grid
58	22KΩ	2	DR12S-223	BT-2-22K	Red-Red-Or. Converter Screen Dropping
59	1000Ω	½	BR12S-102	BTS-1000	Br.-Blk.-Red Converter Plate Decoupling
60	100KΩ	½	BR12S-104	BTS-100K	Br.-Blk.-Yl. AVC Network
61	82KΩ	½	BR12S-823	BTS-82K	Gray-Red-Or. 1st IF Screen Dropping
62	270Ω	½	BR12S-271	BW-½-270	Red-Vi.-Br. 1st IF Cathode
63	1000Ω	½	BR12S-102	BTS-1000	Br.-Blk.-Red 1st IF Plate Decoupling
64	56KΩ	½	BR12S-563	BTS-56K	Grn.-Blue-Or. Diode RF Filter
65	100KΩ	½	BR12S-104	BTS-100K	Br.-Blk.-Yl. AVC Network
66	1 Meg.	½	BR12S-105	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
67	330KΩ	½	BR12S-334	BTS-330K	Or.-Or.-Yl. AVC Network
68	82KΩ	½	BR12S-823	BTS-82K	Gray-Red-Or. 2nd IF Screen Dropping
69	270Ω	½	BR12S-271	BW-½-270	Red-Vi.-Br. 2nd IF Cathode
70	10KΩ	1	CR12S-103	BTA-10K	Br.-Blk.-Or. 2nd IF Plate Load
71	220KΩ	½	BR12S-224	BTS-220K	Red-Red-Yl. 3rd IF Screen Dropping
72	820Ω	½	BR12S-821	BTS-820	Gray-Red-Br. 3rd IF Cathode
73	1000Ω	½	BR12S-102	BTS-1000	Br.-Blk.-Red 3rd IF Plate Decoupling
74	650Ω	10	PA4200-4	AB-600	Filter
75	10 Meg.	½	BR12S-106	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
76	51KΩ	½	BR12S-513	BTS-47K	Grn.-Br.-Or. Ratio Detector Load
77	220KΩ	½	BR12S-224	BTS-220K	Red-Red-Yl. AF Plate Load
78	56KΩ	½	BR12S-563	BTS-56K	Grn.-Blue-Or. AF Plate Decoupling
79	470Ω	2	DR12S-471	BT-2-470	Yl.-Vi.-Br. Output Cathode
80	1 Meg.	½	BR12S-105	BTS-1 Meg.	Br.-Blk.-Grn. Series Phono
81	2200Ω	½	BR12S-222	BTS-2200	Red-Red-Red Antenna Loading



TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	SPARTON PART No.	STANCOR PART No.	THORDARSON PART No.	
82	117V AC @ .56A	500V CT @ .075A	5.0V AC @ 2.0A	6.4V AC @ 2.5A	AB44010-1	P-6011‡	T22R02‡	P-2951‡

‡Add series resistor to reduce plate voltage. Drill new mounting holes.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		SPARTON PART No.	STANCOR PART No.	THORDAR'N PART No.		
	PRI.	SEC.	PRI.	SEC.					
83	6000Ω	3.4Ω	345Ω	.4Ω	AB44056-1	A-3878	T22S46	A-2961	

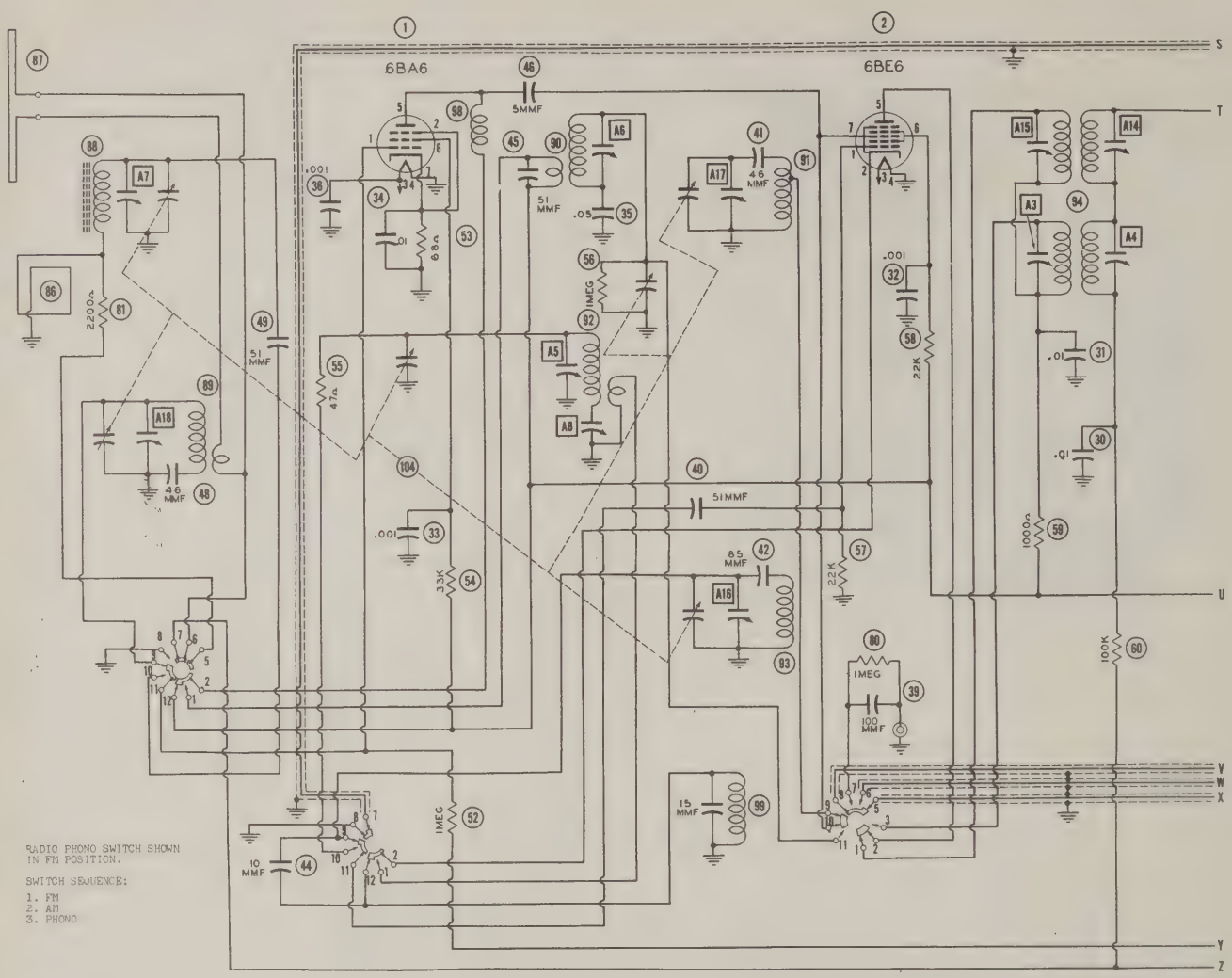
SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	FIELD	VC IMP.	SPARTON PART No.	JENSEN PART No.		
84	PM	3.4Ω	PC-63000-12	ST-120† Mod. P10-S		†Replace output transformer to match 6-8Ω voice coil.
	CONE DIA.	VC DIA.				
85	9½"	1"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER			

DISASSEMBLY INSTRUCTIONS

1. Remove four push-on type control knobs.
2. Remove ten screws holding panel on back of cabinet. Remove two leads from loop antenna and remove back panel.
3. Remove phono-pickup plug from chassis.
4. Remove speaker plug from chassis.
5. Disconnect phono-motor plug.
6. Remove FM dipole from terminal strip on back of chassis.
7. Remove three hex head screws holding chassis in cabinet. Remove chassis from cabinet.
8. Remove four hex nuts holding speaker in cabinet. Remove speaker from cabinet.

DATE 12/47 SET #29 FOLDER #4719-25



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6BA6	-.1VDC	1VDC	6.4VAC	0V.	230VDC	100VDC	1VDC	-
2	6BE6	-5.3VDC§	0V.	6.4VAC	0V.	225VDC	87VDC	-.4VDC	-
3	7A7	6.4VAC	225VDC	75VDC	2.1VDC	0V.	-.2VDC	2.1VDC	0V.
‡ 4	7A7	6.4VAC	170VDC	75VDC	2.1VDC	0V.	-.1VDC	2.1VDC	0V.
‡ 5	7C7	6.4VAC	230VDC	105VDC	2.7VDC	0V.	0V.	2.7VDC	0V.
6	6S8GT	-.1VDC	0V.	0V.	-.6VDC	-.1VDC	100VDC	6.4VAC	0V.
7	7B5	0V.	240VDC	225VDC	200VDC	0V.	0V.	15VDC	6.4VAC
8	5Y3GT	0V.	250VDC	0V.	250VAC	0V.	250VAC	0V.	250VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6BA6	1.3 Meg.	70Ω	.1Ω	0Ω	60KΩ	90KΩ	70Ω	-
2	6BE6	22KΩ	1Ω	.1Ω	0Ω	60KΩ	80KΩ	1 Meg.	-
3	7A7	.1Ω	60KΩ	140KΩ	270Ω	0Ω	300KΩ	270Ω	0Ω
‡ 4	7A7	.1Ω	70KΩ	140KΩ	300Ω	0Ω	1.1 Meg.	300Ω	0Ω
‡ 5	7C7	.1Ω	60KΩ	280KΩ	800Ω	0Ω	.3Ω	800Ω	0Ω
6	6S8GT	INF.	0Ω	0Ω	270KΩ	INF.	340KΩ	.1Ω	0Ω
7	7B5	0Ω	60KΩ	60KΩ	115KΩ	0Ω	480KΩ	470Ω	.1Ω
8	5Y3GT	0Ω	60KΩ	INF.	72Ω	INF.	68Ω	INF.	60KΩ

§TAKEN WITH VACUUM TUBE VOLTMETER.

‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

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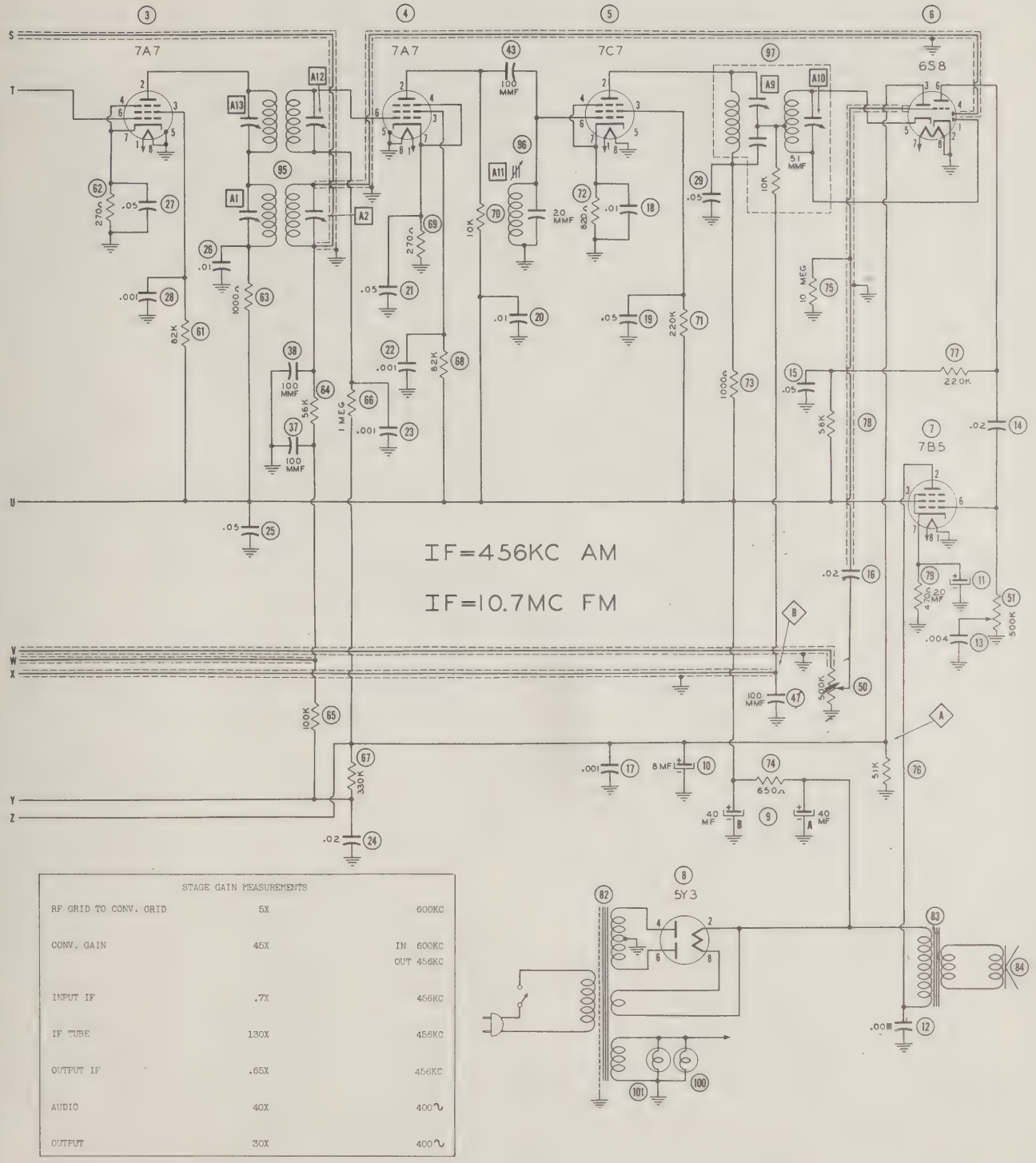
The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.



STAGE GAIN MEASUREMENTS

RF GRID TO CONV. GRID	5X	600KC
CONV. GAIN	45X	IN 600KC OUT 456KC
INPUT IF	.7X	456KC
IF TUBE	130X	456KC
OUTPUT IF	.65X	456KC
AUDIO	40X	400~
OUTPUT	30X	400~

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low freq. end of dial.

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

Dummy antenna consists of a 200 MMFD cap. in series with 20 microhenry choke with the choke shunted by a 400 MMFD cap. in series with a 100Ω carbon resistor.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.02 MFD.	High side to Pin 7 (grid) 6BE6. Low side to chassis.	456KC	BC (center position	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output
2	Dummy Ant.	High side to green ant. lead. Low side to chassis.	1500KC	"	1500KC	"	A5,A6, A7	" " " "
3	"	"	600KC	"	Tune for maximum output.	"	A8	Rock tuning cap. and adjust for maximum output. Repeat Step 2 & 3 until no further improvement can be made. Check calibration at 600 and 1000KC.

FM ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use 60∿synchronized sweep voltage from sig. gen. for horizontal deflection.

There may be some phase shift in sync. sweep voltage which will result in a double pattern per Figure 2. This may be corrected by adding a capacitor of suitable value (.01 to .1 MFD) in series with output of sync. sweep from sig. gen. to horizontalal input of scope.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4	.05 MFD.	High side to Pin 6 (grid) 7C7 3rd IF Tube (5). Low side to chassis.	10.7MC (freq. modulated with 450KC sweep, 60 ∿ modulation.)	FM (fully counter-clockwise)	108MC	Vertical input to Point B. Ground to chassis.	A9,A10	Adjust for maximum amplitude and symmetry with maximum straightness of diagonal line per pattern 1.
5	.05 MFD.	High side to Pin 6 (grid) of 7A7 1st IF Tube (3). Low side to chassis.	"	"	"	Vertical input to Point A. Ground to chassis.	A11,A12 A13	Disconnect 8 MFD cap. at Point A. Adjust for maximum amplitude and symmetry per Figure 3.
6	.05 MFD.	High side to Pin 7 (grid) of 6BE6. Low side to chassis.	"	"	"	"	A14, A15	Adjust for maximum amplitude and symmetry. Per pattern 3.
7	2 150Ω carbon res.	Connect to terminals on FM ant. terminal strip.	108MC	"	108MC	"	A16,A17 A18	Adjust A16 to center pattern (#3) on scope sweep line. Adjust A17 & A18 for maximum amplitude.

FM ALIGNMENT USING AM SIGNAL GENERATOR, OUTPUT METER AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
4	.05 MFD	High side to Pin 6 (grid) of 7A7 2nd IF Tube (4). Low side to chassis.	10.7MC (400∿ amplitude modulation)	FM	108MC	Across voice coil	A10,A11 A9	Adjust for maximum output in order given.
5	.05 MFD.	High side to Pin #6 (grid)of 7A7 1st IF Amp. (3). Low side to chassis.	"	"	"	"	A12, A13	Connect a 15KΩ resistor from Pin 6 (grid) 7A7 2nd IF Tube (4) to chassis Adjust for maximum output. Leave resistor connected.
6	.05 MFD	High side to Pin #7 (grid) of 6BE6. Low side to chassis.	"	"	"	"	A14, A15	Connect 15KΩ resistor from Pin 6 (grid) 7A7 1st IF Tube (3) to chassis. Adjust for maximum output. Repeat Steps 4, 5 & 6 until no further improvement can be made. Remove 2 15KΩ resistors
7	.05 MFD	"	"	"	"	"	A10	Adjust for minimum output.
						CONNECT VTVM		
8	2 150Ω carbon res.	Connect to terminals on FM ant. terminal strip.	108MC	"	108MC	DC probe to Point A. Common lead to chassis.	A16, A17, A18.	Adjust for maximum deflection in order given and repeat. Check calibration at 88MC.

FIGURE 1

FIGURE 2

FIGURE 3

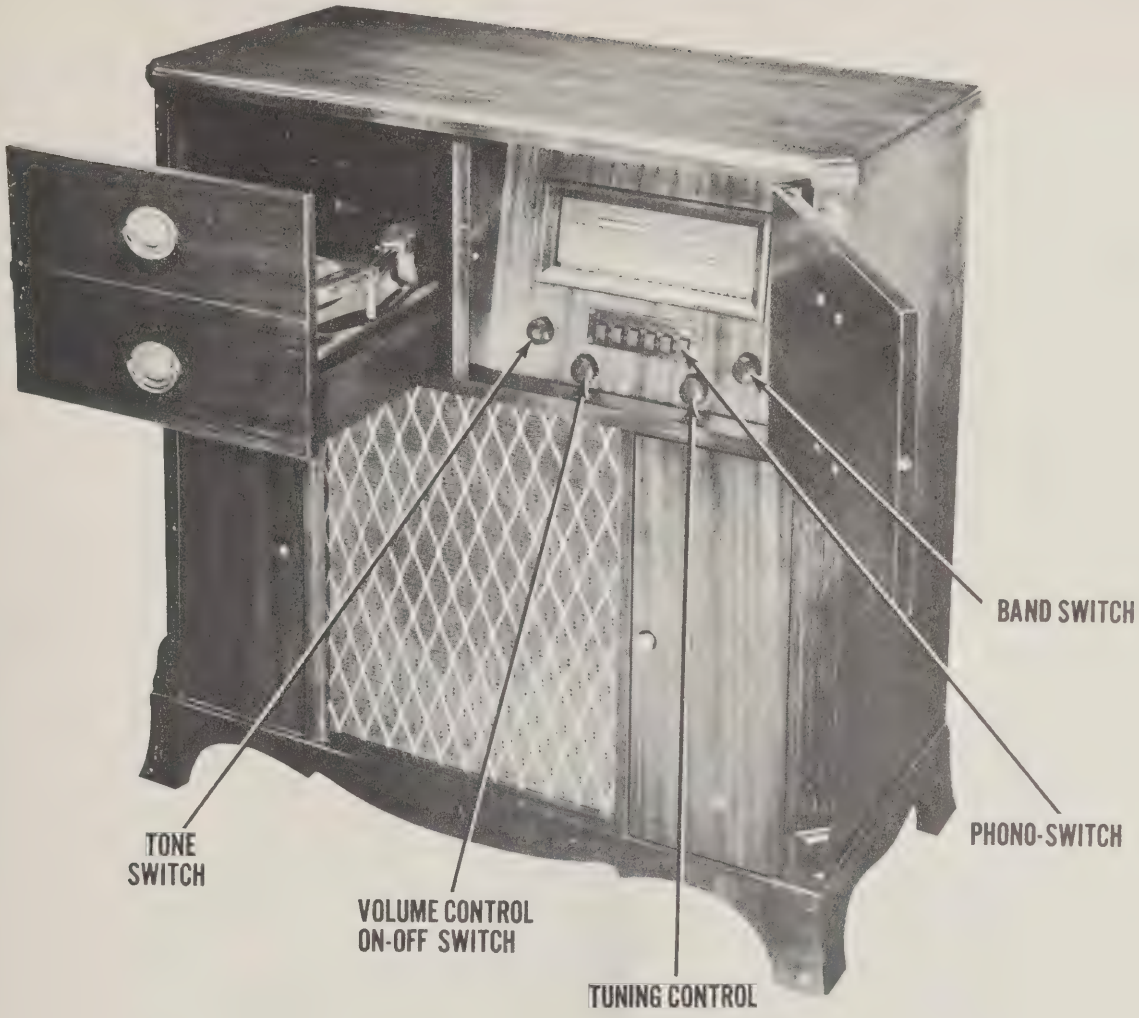
PHOTOFACT* Folder

*TRADE MARK

STEWART-WARNER MODELS A92CR3, A92CR3S (Ch. 9028-C), A92CR6, A92CR6S (Ch. 9028-F)

STEWART-WARNER MODELS A92CR3, A92CR3S (Ch. 9028-C), A92CR6, A92CR6S (Ch. 9028-F)

STEWART-WARNER MODELS A92CR3, A92CR3S (Ch. 9028-C), A92CR6, A92CR6S (Ch. 9028-F) PAGE 1



STEWART WARNER MODEL A92CR6

TRADE NAME	Stewart Warner, Models A92CR3, A92CR3S (Ch. 9028-C), A92CR6, A92CR6S (Ch. 9028-F).
MANUFACTURER	Stewart Warner Corp., 1826 Diversey Pkwy., Chicago, Ill.
TYPE SET	AC Operated FM-AM Radio-Phono Combination Superheterodyne Receiver with Loop Antenna and Pushbutton Tuning.
TUBES (NINE)	Types, 6BA6 RF Amp., 6SB7Y Converter, (2) 6BA6 IF Amp., 6AL5 Discriminator, 6SQ7 Det.-AVC-AF, 6SJ7 AF Amp., 6V6GT Power Output, 5Y3GT Rectifier.
POWER SUPPLY	110-120 Volts AC
RATING	.860 Amp. @ 117 Volts AC
FREQUENCY RANGES - BROADCAST	540-1600KC, FREQ. MOD. 88 - 108MC

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

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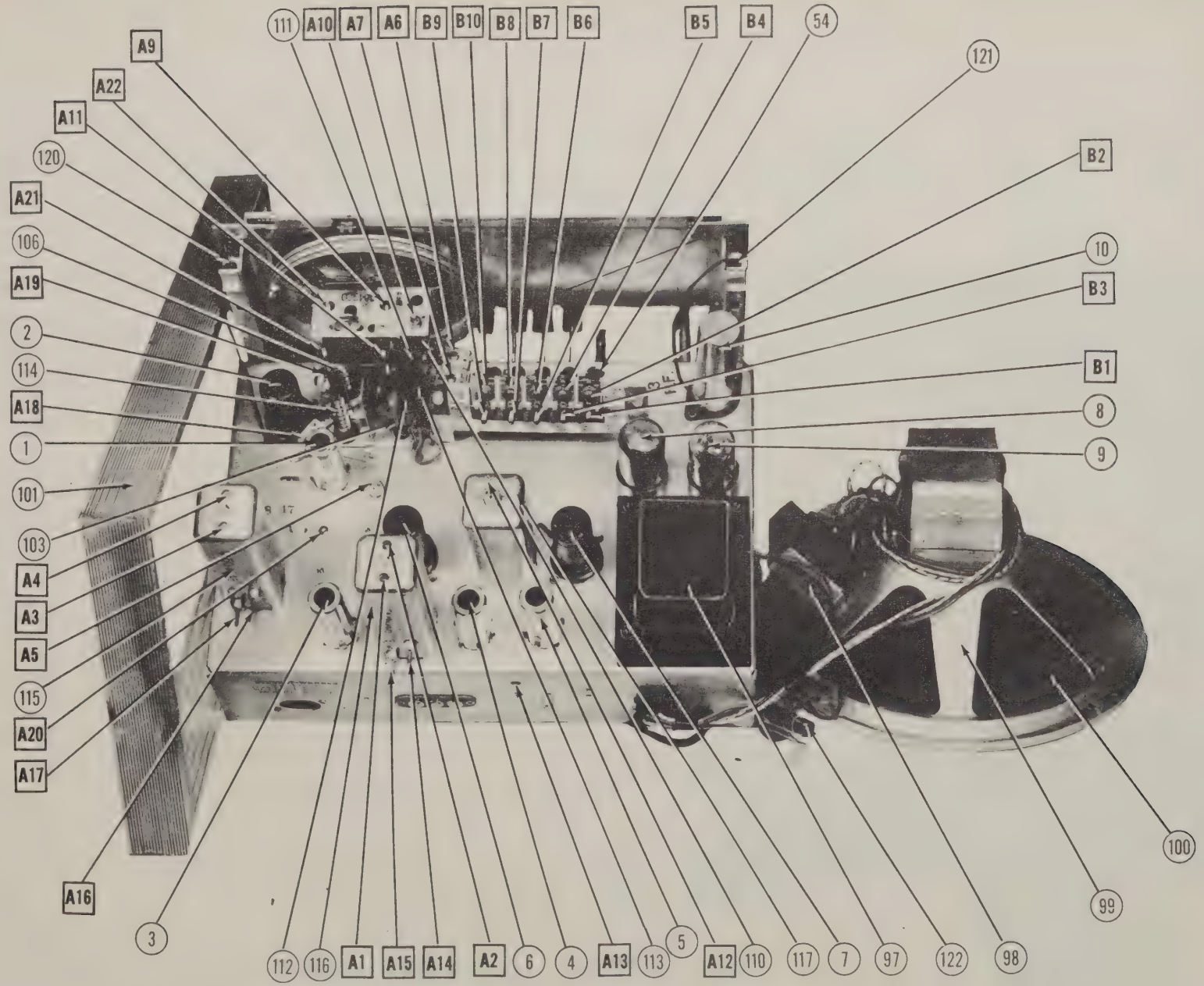
DATE 12/47 SET #29 FOLDER #4719-26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B3
B1
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99
112
116
A1
A15
A14
A2
6
4
A13
113
5
A12
110
117
7
97
122
98

STEWART-WARNER MODELS A92CR3, A92CR3S (Ch. 9028-C), A92CR6, A92CR6S (Ch. 9028-F) PAGE 3

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: STEWART-WARNER PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6BA6	6BA6	7BK	
2	Converter	6SB7Y	6SB7Y	8R	
3	IF Amp.	6BA6	6BA6	7BK	
4	2nd IF Amp.	6BA6	6BA6	7BK	
5	Discriminator	6AL5	6AL5	6BT	
6	Det.-AVC-AF	6SQ7	6SQ7	5Q	
7	AF Amp.	6SJ7	6SJ7	8N	
8	Power Output	6V6GT	6V6GT	7AC	
9	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: STEWART-WARNER PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
10A	20	450	161198	FP339	DY-312	EL-205	AF44J	UP2245C	■ Filter
B	15	450							▲ "
C	10	25					PRSA50-10		Bias Filter
11	16	400	505150	TC74	M-16-450	UT-16	PRSA450-16	BR1645	Filter
12	4	450	504719	TC70	M-4-450	UT-4	PRSA450-4	BR445	"
13	16	400	505150	TC74	M-16-450	UT-16	PRSA450-16	BR1645	"
14	4	450	504719	TC70	M-4-450	UT-4	PRSA450-4	BR445	Decoupling
15	5	50	504937	TC40	M-4-150	TA-55	PRSA150-4	BR550	Ratio Det. Bias
16	.01	400	502804	TP421	MPH-6-01	TC-11	484-01	DT4S1	Line Filter
17	.01	400	502804	TP421	MPH-6-01	TC-11	484-01	DT4S1	" "
18	.006	600	502479	TP409	S-6-006	TC-26	684-006	DT6D6	Output Plate Bypass
19	.02	400	502152	TP423	S-4-02	TC-12	484-02	DT4S2	Audio Coupling
20	.01	600	502261	TP410	S-6-01	TC-11	684-01	DT6S1	Tone Comp.
21	.25	400	502405	TP430	S-4-.25	TC-2	484-.25	DT4P25	Feedback
22	.004	600	502150	TP407	S-6-004	TC-24	684-004	DT6D4	Audio Coupling
23	.01	600	502261	TP410	S-6-01	TC-11	684-01	DT6S1	" "
24	.05	400	502157	TP426	S-4-05	TC-11	484-05	DT4S5	De-emphasis
25	.01	600	502261	TP410	S-6-01	TC-11	684-01	DT6S1	"
26	.01	600	502261	TP410	S-6-01	TC-11	684-01	DT6S1	IF Plate Decoup.
27	.01	600	502261	TP410	S-6-01	TC-11	684-01	DT6S1	IF Screen Bypass
28	.01	600	502261	TP410	S-6-01	TC-11	684-01	DT6S1	IF Plate Decoup.
29	.01	600	502261	TP410	S-6-01	TC-11	684-01	DT6S1	IF Screen Bypass
30	.05	200	502153	TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter
31	.01	600	502261	TP410	S-6-01	TC-11	684-01	DT6S1	Conv. Plate Decoup.
32	.01	600	502261	TP410	S-6-01	TC-11	684-01	DT6S1	Conv. Screen Bypass
33	.02	200	504725	TP423	S-4-02	TC-12	484-02	DT4S2	AVC Filter
34	.05	200	502153	TP426	S-4-05	TC-15	484-05	DT4S5	" "
35	.01	600	502261	TP410	S-6-01	TC-11	684-01	DT6S1	RF Plate Decoup.
36	.05	150	504447	TP426	S-4-05	TC-15	484-05	DT4S5	RF Cathode Bypass
37	.01	600	502261	TP410	S-6-01	TC-11	684-01	DT6S1	Tone Compensation
38	.004	600	502150	TP407	S-6-004	TC-24	684-004	DT6D4	Osc. Feedback
39	260	500	502271	MC240	MO.5-325	1FM-325	1468-00025	5W5T25	AF Plate Bypass
40	150	500	502202	MC236	MO.5-315	1FM-315	1468-00015	5W5T15	Ratio Det. Load Cer.
41	500	500	504727	MC245	MO.5-35	1FM-35	1468-0005	5W5T5	2nd IF Grid Filter
42	100	500	502931	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	Diode Filter Cer.
43	15	500	504733			MS-415			FM Osc. Grid Cer.
44	47	500	502929	MC225	MO.5-45	1FM-45	1468-00005	5W5Q5	AM Osc. Grid
45	200	500	505069	MC237	MO.5-32	1FM-32	1468-0002	5W5T2	PB Osc. Grid
46	5	500	504905	MC205	MO.5-55	MS-55	1468-000005	5W5V5	Osc. Feedback Cer.
47	47	500	502929	MC225	MO.5-45	1FM-45	1468-00005	5W5Q5	" " "
48	200	500	505069	MC237	MO.5-32	1FM-32	1468-0002	5W5T2	" "
49	47	500	502929	MC225	MO.5-45	1FM-45	1468-00005	5W5Q5	RF Coupling Cer.
50	100	500	502931	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	" " "
51	39	500	504659	MC223	MO.5-44	1FM-44	1468-00004	5W5Q4	Fixed Trimmer Cer.
52	1000	500	504734	MC255	MO.5-21	1FM-21	1468-001	1W5D1	RF Screen Bypass Cer.
53	30	500	504723		MO.5-43	MS-43		5W5Q3	FM Ant. Pri. Shunt
54	39	500	504659	MC223	MO.5-44	1FM-44	1468-00004	5W5Q4	Fixed Trimmer Cer.
127	.01	600	502261	TP410	S-6-01	TC-11	684-01	DT6S1	Loop Ant. Coupling†
128	100	500	502931	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	" " " " †

†Used in "S" models only.

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: STEWART-WARNER PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
55A	500KΩ	½	502148	MK401	D1S-135	AM-60-2	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 55A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: STEWART-WARNER PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
56	68KΩ	½	502408	BTS-68K	Blue-Gray-Or. Phono Shunt
57	100KΩ	½	502132	BTS-100K	Br.-Blk.-Yl. Series Phono
58	68Ω	½	502794	BW-½-68	Blue-Gray-Blk. RF Cathode
59	33KΩ	1	502466	BTA-33K	Or.-Or.-Or. RF Screen Dropping
60	10KΩ	1	504732	BTA-10K	Br.-Blk.-Or. RF Plate Load-See Note 1
61	2200Ω	½	502128	BTS-2200	Red-Red-Red RF Plate Decoupling
62	22KΩ	½	502130	BTS-22K	Red-Red-Or. Converter Grid
63	22KΩ	½	502130	BTS-22K	Red-Red-Or. " "
64	560KΩ	½	504907	BTS-560K	Grn.-Blue-Yl. AVC Network
65	470KΩ	½	502134	BTS-470K	Yl.-Vi.-Yl. AVC Network
66	22KΩ	½	502130	BTS-22K	Red-Red-Or. Oscillator Grid
67	2200Ω	½	502128	BTS-2200	Red-Red-Red Converter Plate Decoupling
68	68Ω	½	502794	BW-½-68	Blue-Gray-Blk. IF Cathode - See Note 2
69	33KΩ	1	502466	BTA-33K	Or.-Or.-Or. IF Screen Dropping
70	2200Ω	½	502128	BTS-2200	Red-Red-Red IF Plate Decoupling
71	680KΩ	½	502267	BTS-680K	Blue-Gray-Yl. AVC Network
72	47KΩ	½	502131	BTS-47K	Yl.-Vi.-Or. Diode Filter
73	68Ω	½	502794	BW-½-68	Blue-Gray-Blk. FM IF Cathode
74	220KΩ	½	502133	BTS-220K	Red-Red-Yl. AVC Network
75	2.2 Meg.	½	502135	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
76	33KΩ	1	502466	BTA-33K	Or.-Or.-Or. FM IF Screen Dropping
77	2200Ω	½	502128	BTS-2200	Red-Red-Red FM IF Plate Decoupling
78	3300Ω	½	502514	BTS-3300	Or.-Or.-Red De-emphasis
79	10 Meg.	½	502136	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
80	100KΩ	½	502132	BTS-100K	Br.-Blk.-Yl. AF Plate Load
81	330KΩ	½	502892	BTS-330K	Or.-Or.-Yl. AF Plate Decoupling
82	22KΩ	½	502130	BTS-22K	Red-Red-Or. Ratio Detector Bias Network
83	4.7 Meg.	½	502468	BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Grid
84	1500Ω	½	502406	BTS-1500	Br.-Grn.-Red AF Cathode-See Note 3
85	2.2 Meg.	½	502135	BTS-2.2 Meg.	Red-Red-Grn. AF Screen Dropping
86	4.7 Meg.	½	502468	BTS-4.7 Meg.	Yl.-Vi.-Grn. Tone Compensation
87	47KΩ	½	502131	BTS-47K	Yl.-Vi.-Or. " "
88	4700Ω	½	502291	BTS-4700	Yl.-Vi.-Red " "
89	220KΩ	½	502133	BTS-220K	Red-Red-Yl. AF Plate Load
90	470KΩ	½	502134	BTS-470K	Yl.-Vi.-Yl. Output Grid
91	47Ω	1	502454	BW-1-47	Yl.-Vi.-Blk. Parasitic Suppressor
92	12KΩ	2	504731	BT-2-12K	Br.-Red-Or. Filter
93	12KΩ	2	504731	BT-2-12K	Br.-Red-Or. "
94	1000Ω	½	502478	BTS-1000	Br.-Blk.-Red "
95	130Ω	2	504729	BW-2-120	Br.-Or.-Br. Bias Network
96	11Ω	½	504728	BTS-10	Br.-Br.-Blk. " "
129	680KΩ	½	502267	BTS-680K	Blue-Gray-Yl. RF Grid-See Note 4
130	470Ω	½	502126	BTS-470	Yl.-Vi.-Br. Feedback-See Note 4

Note 1 - In Chassis "S" 1500Ω is used in this application.
Note 2 - Not used in Chassis "S".
Note 3 - In Chassis "S" 1000Ω is used in this application.
Note 4 - Used in Chassis "S" only.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: STEWART-WARNER PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: THORDARSON PART No.	REPLACEMENT DATA: MERIT PART No.
97	117V AC @ .90A	640V CT @ .04A	4.8V AC @ 2.0A	6.1V AC @ 3.2A	504643	P-6013	T22R05	P-2153

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA STEWART-WARNER PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA THORDAR'N PART No.	REPLACEMENT DATA MERIT PART No.	INSTALLATION NOTES
98A	5500Ω	3.4Ω	300Ω	.6Ω	505029	A-3924	T22S58	A-2304	Used with Speaker E-502302
B					505394				" " " " O-502302
C					502094				" " " " M-502302

SPEAKER

ITEM No.	RATINGS FIELD RES.	RATINGS VC IMP.	REPLACEMENT DATA STEWART-WARNER PART No.	REPLACEMENT DATA JENSEN PART No.		INSTALLATION NOTES
99A	1000Ω	3.4Ω	E-502302	ST-175 Mod. F10-S		
B			O-502302			Alternate Speaker
C			N-502302			" "
	CONE DIA.	VC DIA.				
100	9½"	1¼"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA STEWART-WARNER PART No.	REPLACEMENT DATA MEISSNER PART No.	
101	Loop Ant.		1.5Ω	504602		
102	FM Ant.			504695		Items 103, 111, 105 & 106 are slug tuned and ganged together
103	BC Ant.Coil		10Ω	505151		
104	PB Ant.Coil		2.5Ω	505041		
105	FM Ant.Coil	0Ω	0Ω	504692		
106	FM RF Coil		0Ω	505159		
107	Wave Trap		26Ω	504670		
108	RF Choke		.1Ω	504675		
109	" "		20Ω	504673		
110	BC Osc. Shunt Coil		5.5Ω	505155		
111	BC Osc.Coil		3.5Ω	505153		
112	BC Osc. Series Coil		.1Ω	505157		
113	BC Osc. Comp. Coil		INF.	505158		
114	FM Osc.Coil		0Ω	505159		
115A	BC Input IF	18Ω	18Ω*	504645		Items 115A & 115B are in same can.
B	FM " "	1.5Ω				
116A	BC Ouput IF	23Ω#	17Ω	504646		Items 116A & 116B are in same can.
B	FM " "		1Ω			
117	Disc. Trans.	1.2Ω	.5Ω	504690		
118	Fil. RF Choke		.1Ω			
119	RF Choke		.1Ω	504675		
131	Loop Ant.			505668		Used in "S" models only.

*Includes both sec. #Includes both pri.

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA STEWART-WARNER PART No.		INSTALLATION NOTES
120	Bayonet	-8	0.35	Blue	110629		Type 44
121	"	"	"	"	110629		"
122	"	"	"	"	110629		"

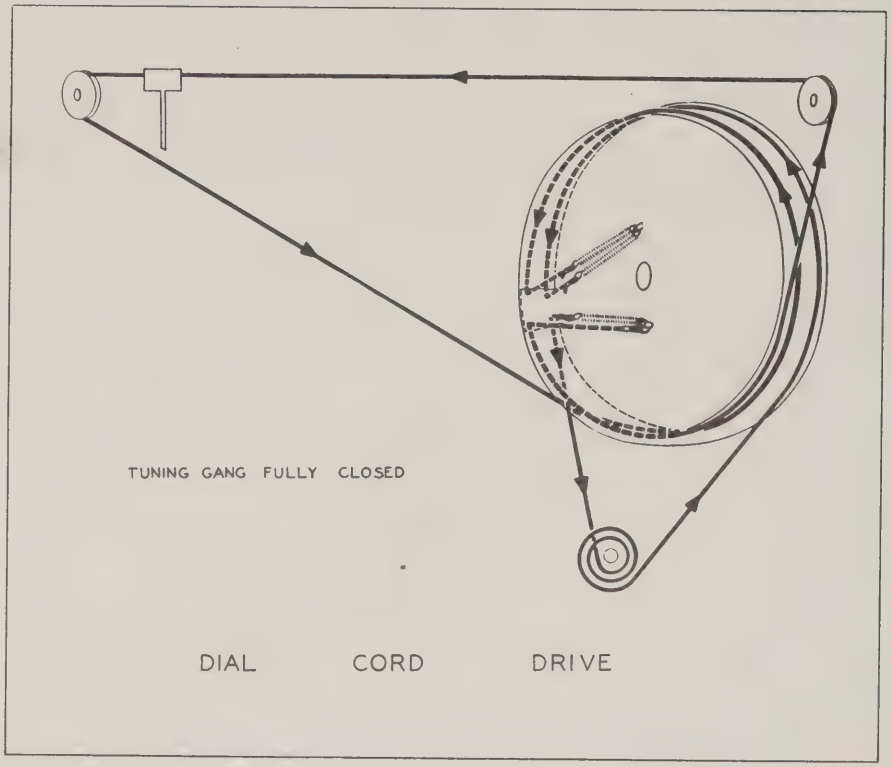
PARTS LIST AND DESCRIPTIONS (Continued)

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA STEWART-WAR. PART No.	REPLACEMENT DATA ASTATIC PART No.	REMARKS
123	502461	L-71	

MISCELLANEOUS

ITEM No.	PART NAME	STEWART-WARNER PART No.	NOTES
124	Bandswitch	504593	
125	Tone Switch	504592	
126	Pushbutton Assy.	504596	
A6 } A7 }	Dual Trimmer	504712	{220-340 MMF 50-120 MMF
A8	Trimmer	504656	390-550MMF
A13	"	504662	35-55MMF
A18	"	502757	6.5-35MMF
A19	"	502757	6.5-35MMF
A20	"	504663	5-20MMF
	Dial Scale	504839	
	Dial Pointer	504838	
	Needle	502460	Phonograph



DATE 12/47 SET #29 FOLDER #4719-26

STEWART-WARNER MODELS A92CR3, A92CR35 (Ch. 9028-C), A92CR6, A92CR65 (Ch. 9028-F) PAGE 5

AM ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Disconnect leads from FM antenna terminal strip at back of chassis; also disconnect all other plugs on rear of chassis and remove chassis from cabinet. Remove speaker from cabinet and reconnect plug to chassis. Remove the AM Loop Antenna.

If alignment of both AM & FM channels is required it is necessary to align the AM channel first, then align the FM channel.

Do not attempt to reposition pointer by releasing it from clip on dial cord except during AM alignment (Step 4). If pointer is moved it will necessitate re-alignment of the RF section of the FM channel (Steps 17-19).

For AM alignment wind one turn of insulated wire around frame of the loop to provide coupling to the signal generator. Keep loop in same relative position to the chassis as when mounted in cabinet during AM alignment.

Dress leads from slug tuner assembly and pushbutton switch away from the wave trap coil and close to the chassis.

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

After chassis is mounted in cabinet spread the loop leads as much as possible. Do not twist or tape these leads together.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to ungrounded side of trimmer A7. Low side to chassis.	455KC	BC (center position)	Any position where interfering signal is not received.	Across voice coil	A1, A2, A3, A4.	Adjust for maximum output. Repeat adjustments.
2	.1 MFD.	"	"	"	"	"	A5	Adjust for minimum output.
	If position of AM Tuner Slugs have been disturbed or if coil or slug has been replaced omit Steps 3-6 inclusive and proceed with Step 7. If not, proceed with Step 7.							
3	500MMF Mica.	Connect to coupling turn on loop. (See pre-alignment instructions)	535KC	BC (center pos.)	Set slug tuner fully closed.	Across voice coil	A6	Adjust for maximum output.
4	"	"	1000KC	"	Tune for maximum output.	"	-	Pointer should be under 1000KC.calibration mark. (Wide mark slightly to right of 100). If it is not, release clip on pointer and set to correct mark.
5	"	"	1500KC	"	"	Across voice coil	A7	Note position of pointer. If it is not more than 20KC from 1500KC mark, adjust A7 for maximum output. If it is more than 20KC off omit next step and proceed with Step 7.
6	"	"	600KC	"	"	"	A8	Adjust for maximum output. Try to increase output by detuning A8 and retuning receiver until maximum output is obtained. Repeat Steps 5 & 6 until no further increase can be obtained. This completes BC band alignment. The following steps under "Slug Tuner Adjustments". should be made only where conditions described previously were encountered.

AM SLUG TUNER ADJUSTMENTS

This procedure is to be used only where the positions of slugs in the slug tuner have been disturbed or in event of a coil or slug replacement, or where a serious calibration or tracking error is noted after attempting to align the receiver as described in the preceding section.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
7	500MMF. Mica.	Connect to coupling turn on loop.	535KC	BC	Set slug tuner fully closed.	Across voice coil	A9	Back out A6 to minimum capacity. Rotate A9 and note whether peak can be obtained. If not, tighten A6 slightly and adjust A9 for maximum. Always rotate A9 so that core is moving down. The purpose of this adjustment is to resonate coil and capacitor at the lowest capacity position of A6.
8	"	"	1500KC	"	1500KC	"	A6	Adjust for maximum output.
9	"	"	535KC	"	Set slug tuner fully closed.	"	A10	Adjust for maximum output. Repeat Steps 8 and 9 until both points are correctly calibrated.
10	"	"	1500KC	"	Tune for maximum output.	"	A7	Adjust for maximum output.
11	"	"	1000KC	"	"	"	A11	" " " "
12	"	"	600KC	"	"	"	A8	Adjust for maximum output. Try to increase output by detuning A8 and retuning receiver until maximum output is obtained. Repeat Steps 10, 11 & 12 until no further improvement can be made. Apply speaker cement to top of each AM tuning slug.

FM ALIGNMENT INSTRUCTIONS

Disconnect leads from FM antenna terminal strip (labelled "A-G-A") at back of chassis; also disconnect all other plugs on rear of chassis and remove chassis from cabinet. It is not necessary to remove the built in FM antenna.

Remove speaker from cabinet and reconnect plug to receiver chassis.

It is preferable to use an FM signal generator and an oscilloscope for FM alignment. However, if this equipment is not available a reasonably accurate alignment may be obtained using a conventional AM signal generator and vacuum tube voltmeter providing proper care is exercised in adjusting the discriminator circuit trimmer.

Use only a signal generator which produces fundamental frequencies at 10.7MC and 88 to 108 MC. Signal generators which rely on the third, fourth or fifth harmonics to produce these signals produce beat signals with the local oscillator making alignment difficult.

Remove the metal shield in the vicinity of the IF stages used on some sets. Dress FM circuit leads as short and straight as possible, particularly in the oscillator circuit. IF plate and grid leads should also be kept short and straight.

FM ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

If the internal sawtooth generator (120 cps) of the oscilloscope is used for horizontal deflection a pattern similar to that of Fig. 1 should be obtained. If the properly phased 60~ sine wave sync. voltage from the FM signal generator is used for horizontal deflection a pattern similar to that in Fig. 2 should be obtained. Frequency modulate signal with 60~, 300KC deviation.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
13	.01 MFD.	High side to Pin #1 of 6BA6 2nd IF Tube #4. Low side to chassis near same tube.	10.7MC (Modulated ± 300KC)	FM (clockwise)	Any position where interfering signal is not received.	High side vertical amp. in series with .1 MFD. to Pin #6 of 6SQ7. Low to chassis.	A12	Adjust A13 for pattern similar to Fig. 1 or Fig. 2 depending on type of sweep used. (See prealignment instructions). Then adjust A12 for maximum amplitude and steepness of that portion of the curve between A & C.
14	.01 MFD.	"	"	"	"	"	A13	Adjust until cross-over point B is centrally located in both horizontal and vertical directions. Also the portion of the curve between A & C should be as straight as possible. Recheck settings of A12 & A13 for greater accuracy.
15	.01 MFD.	High side to Pin #1 of 6BA6 1st IF Tube #3. Low side to chassis near same tube.	"	"	"	"	A14,A15	Adjust for maximum amplitude and steepness of that portion of the curve between A & C.
16	.01 MFD.	High side to junction of A19 and FM RF coil. Low side to chassis near tuner unit.	"	"	"	"	A16,A17	Adjust for maximum amplitude and steepness of pattern. If the enlarged pattern indicates a lack of symmetry, readjust A13 for correct crossover point.
	If position of FM tuner slugs have been disturbed or if coil or slug has been replaced omit Steps 17-19 inclusive and proceed with Step 20. If not, proceed with Step 17.							
17	150Ω & 120Ω carbon res.	High side to "A" terminal at rear of chassis in series with 120Ω. Low side to other "A" terminal in series with 150Ω.	98MC (modulated ± 300KC)	FM (clockwise)	98MC	High side vertical amp. in series with .1 MFD to Pin #6 of 6SQ7. Low to chassis.	A18	Adjust for symmetrical pattern. Correct setting will give centrally located cross-over point.
18	"	"	"	"	"	"	A19	Adjust for maximum amplitude of pattern. Recheck A16 and A17 for maximum amplitude and symmetry of pattern.
19	"	"	90MC (Modulated ± 300KC)	"	Tune 90MC signal.	"	A20	Adjust for maximum amplitude of pattern. Check calibration at 88MC and 108MC. If within .4MC alignment is satisfactory. If greater than .4MC perform Steps 20, 21 and 22.

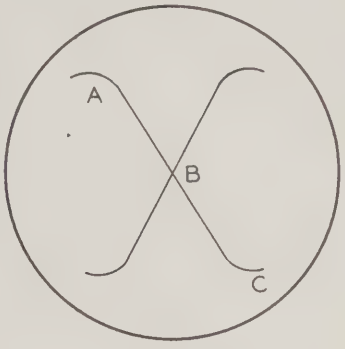


FIG. 1

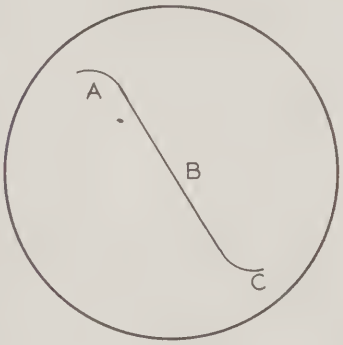
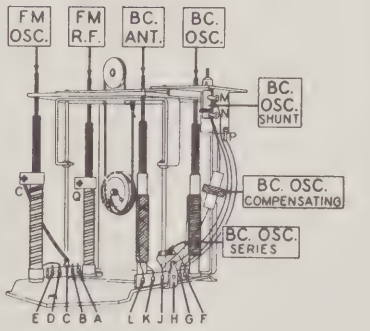


FIG. 2

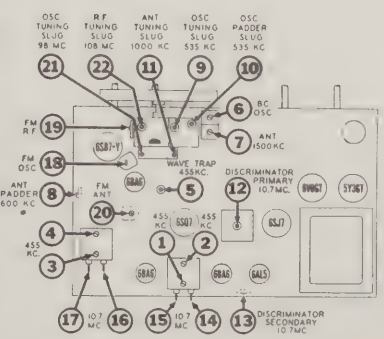
FM SLUG TUNER ADJUSTMENTS

This procedure is to be used only where the positions of slugs in the slug tuner have been disturbed or in event of a coil or slug replacement, or where a serious calibration or tracking error is noted after attempting to align the receiver as described in the preceding section.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
20	150Ω & 120Ω carbon res.	High side to "A" terminal at rear of chassis in series with 120Ω. Low side to other "A" terminal in series with 150Ω.	88MC (Modulated ± 300KC	FM (clockwise)	88MC	High side vertical amp. in series with .1 MFD. to Pin #6 of 6SQ7. Low side to chassis.	A19,A18 A20	Adjust A18 for symmetrical pattern. Adjust A19 and A20 for maximum amplitude of pattern.
21	"	"	98MC (Modulated ± 300KC)	"	98MC	"	A21	Adjust for symmetrical pattern.
22	"	"	108MC (Modulated ± 300KC)	"	108MC	"	A22	Adjust position of heavy braided lead connection to osc. coil for symmetrical pattern. Coat lead with speaker cement. Repeat A22 for maximum amplitude. Repeat Steps 20, 21 and 22 until satisfactory calibration and tracking at 88, 98 and 108MC is obtained. Apply speaker cement to top of each FM tuning slug.



SLUG TUNER ASSEMBLY

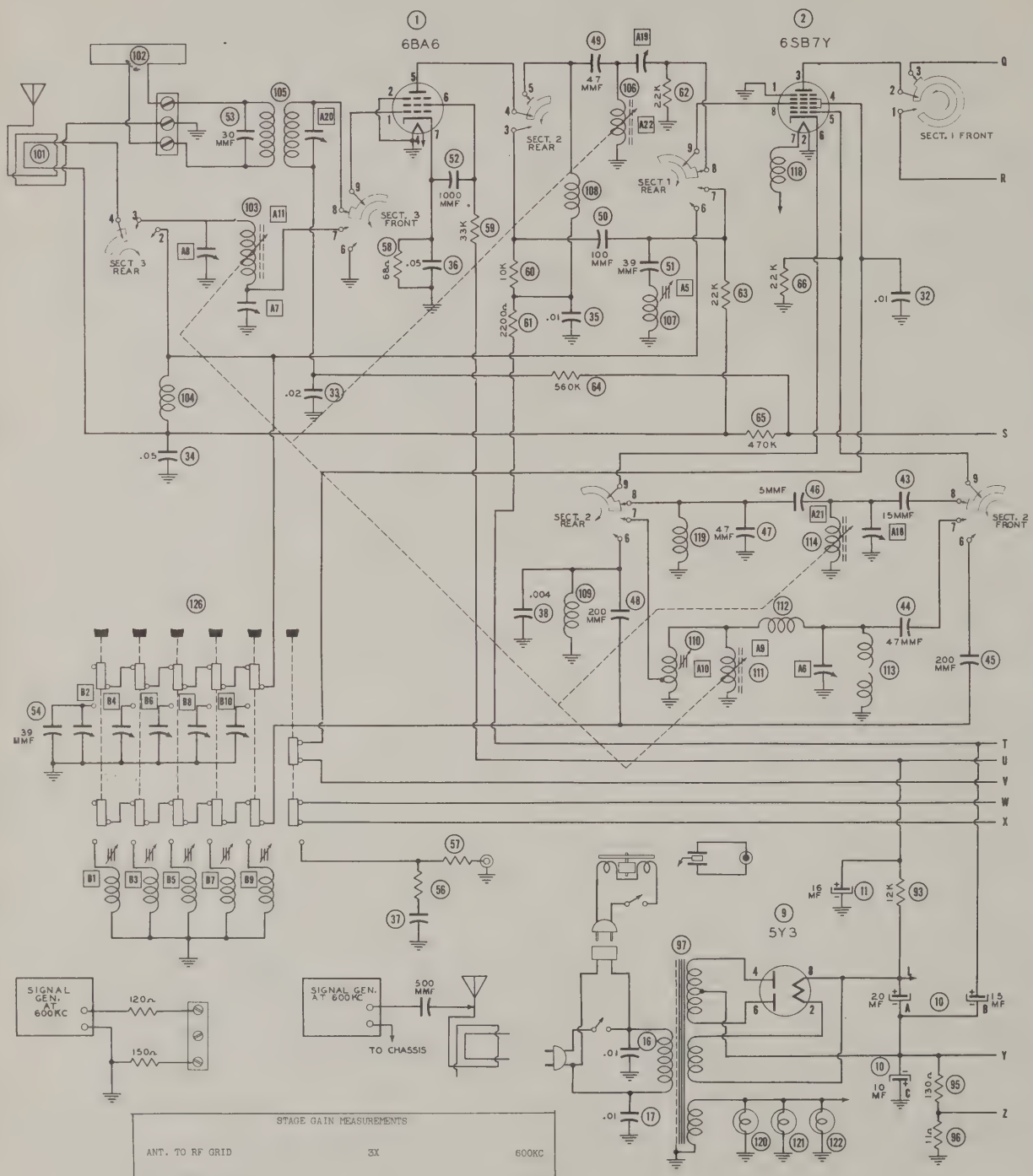


TRIMMER LOCATION CHART

CIRCLED NUMBERS CORRESPOND TO "A" ADJUSTMENT NUMBERS IN THE ALIGNMENT PROCEDURE.

SEE BACK PAGE FOR ALTERNATE FM ALIGNMENT INSTRUCTIONS

DATE 12/47 SET #29 FOLDER #4719-26



STAGE GAIN MEASUREMENTS			
ANT. TO RF GRID	3X		600KC
RF GRID TO CONV. GRID	4X		600KC
CONV. GAIN	9X	IN	600KC
		OUT	455KC
1st IF GRID TO DIODE	100X		455KC
AUDIO	20X		400~
OUTPUT	15X		400~

IF=455KC AM

IF=10.7MC FM

BAND SWITCH SHOWN IN FM POSITION.
(MAXIMUM CLOCKWISE POSITION)

SWITCH SEQUENCE: (FROM MAX. CCW POS.)

1. PUSHBUTTON
2. BROADCAST
3. FREQ. MOD.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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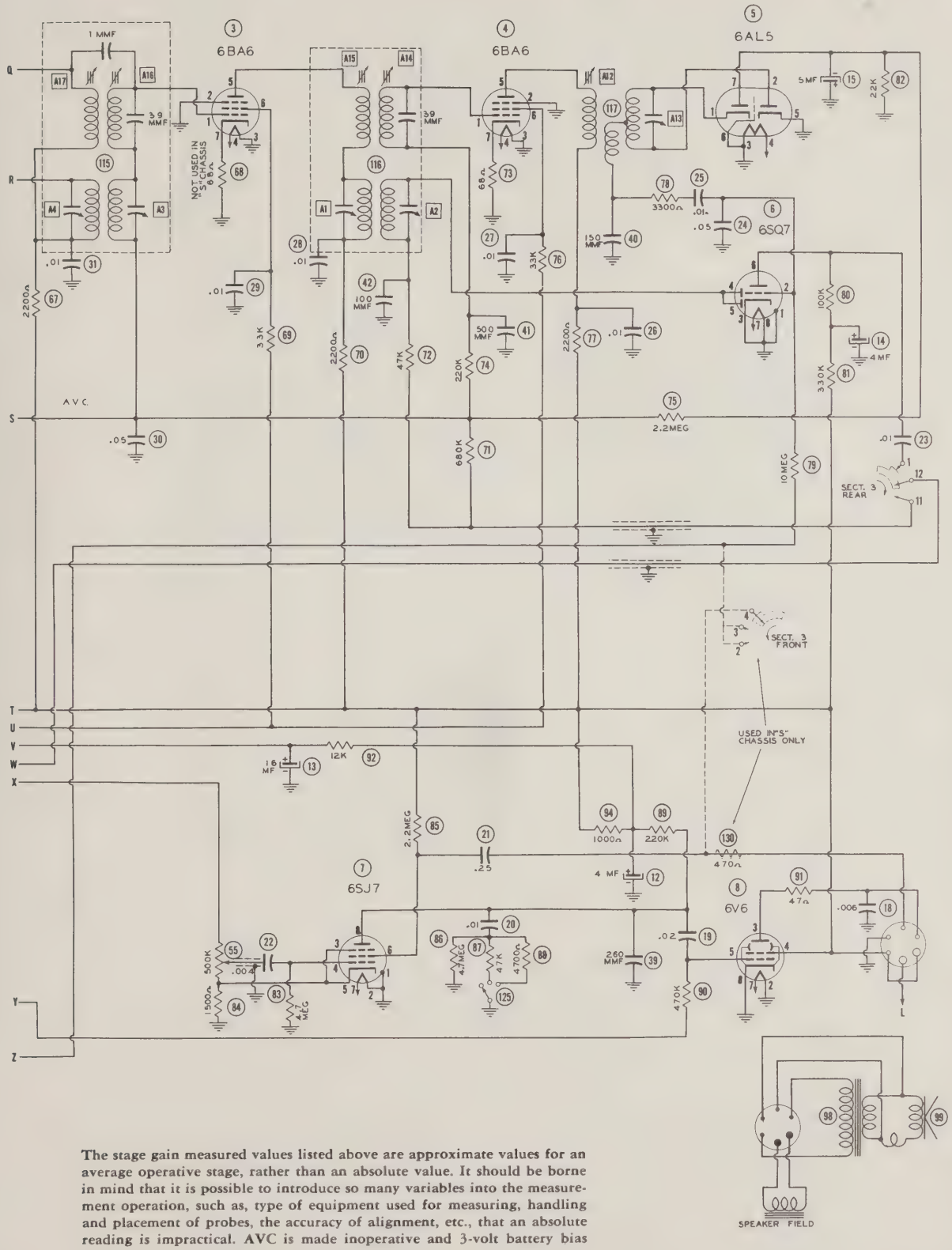
4719-26



The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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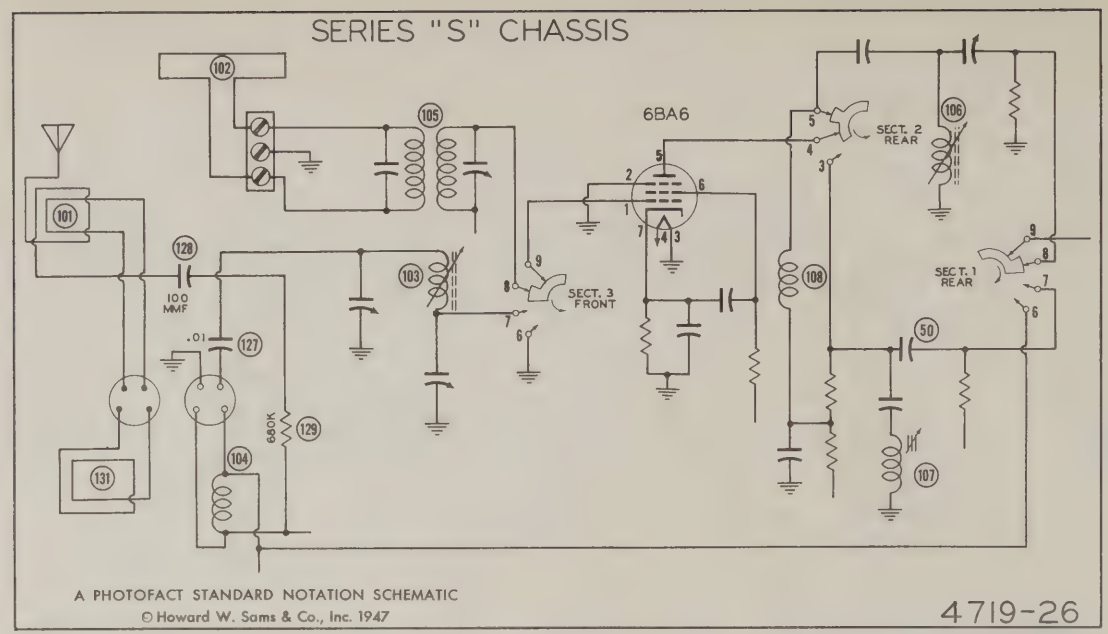


VOLTAGE AND RESISTANCE READINGS ON "S" SERIES HAVE FOLLOWING EXCEPTIONS:

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6BA6	-1.1VDC	0V.	0V.	6.1VAC	200VDC	135VDC	.9VDC	-
3	6BA6	-.9VDC	0V.	0V.	6.1VAC	245VDC	120VDC	0V.	-
7	6SJ7	0V.	0V.	.4VDC	0V.	.4VDC	20VDC	6.1VAC	135VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6BA6	2 Meg.	0Ω	0Ω	.1Ω	65KΩ	95KΩ	70Ω	-
3	6BA6	850KΩ	0Ω	0Ω	.1Ω	60KΩ	95KΩ	0Ω	-
7	6SJ7	0Ω	0Ω	1000Ω	5 Meg.	1000Ω	2.2 Meg.	.1Ω	230KΩ

VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

VOLTAGE READINGS

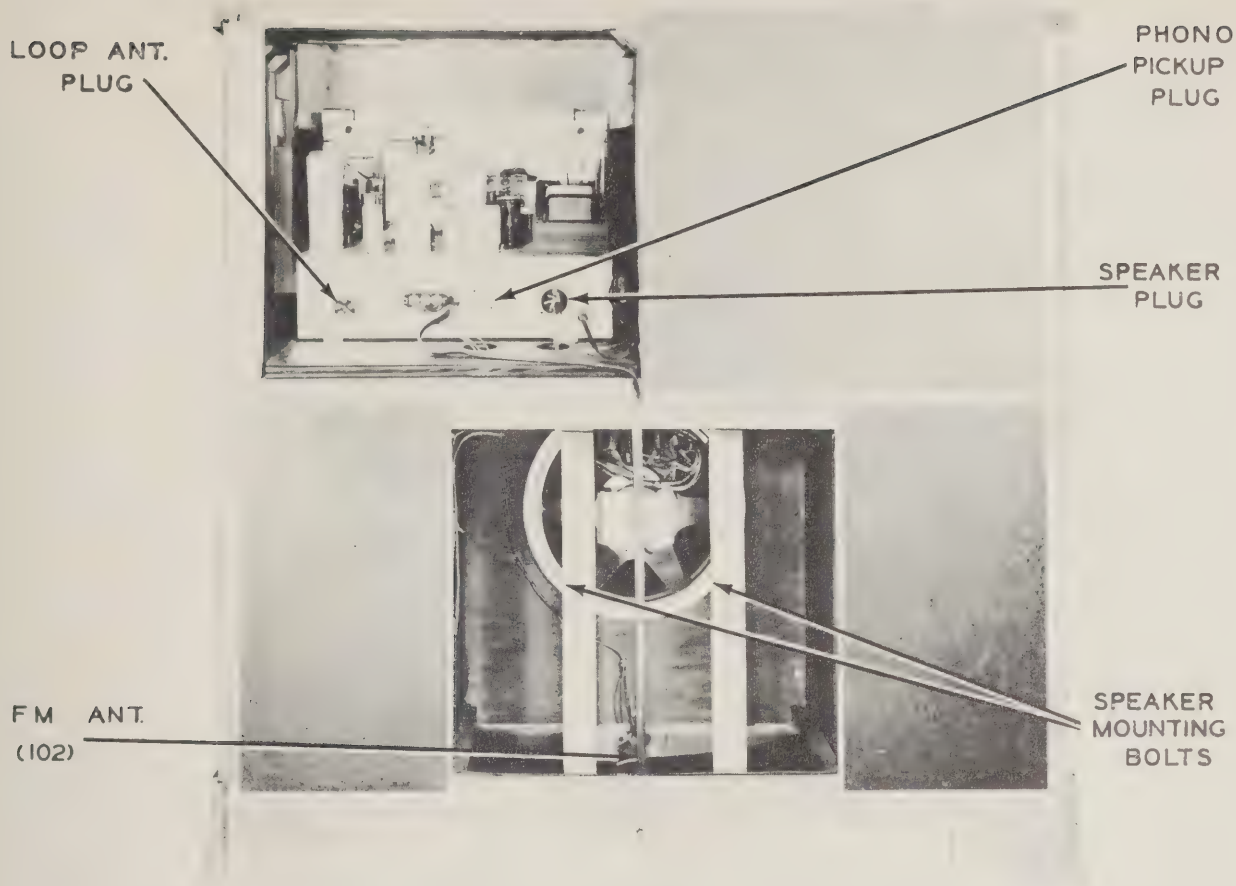
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6BA6	-1.4VDC	0V.	0V.	6.1VAC	170VDC	135VDC	.9VDC	-
2	6SB7-Y	0V.	0V.	260VDC	105VDC	-10VDC§	0V.	6.1VAC	-1.6VDC
3	6BA6	-.8VDC	0V.	0V.	6.1VAC	245VDC	125VDC	1VDC	-
4	6BA6	-.6VDC	0V.	0V.	6.1VAC	245VDC	125VDC	.9VDC	-
‡ 5	6AL5	-.2VDC	-.2VDC	0V.	6.1VAC	0V.	0V.	-.4VDC	-
6	6SQ7	0V.	-.6VDC	0V.	-.7VDC	-.7VDC	105VDC	6.1VAC	0V.
7	6SJ7	0V.	0V.	.9VDC	0V.	.9VDC	23VDC	6.1VAC	145VDC
8	6V6GT	0V.	0V.	250VDC	260VDC	-5VDC	0V.	6.1VAC	0V.
9	5Y3GT	0V.	360VDC	330VDC	320VAC	260VDC	320VAC	0V.	360VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6BA6	1.3 Meg.	0Ω	0Ω	.1Ω	70KΩ	95KΩ	70Ω	-
2	6SB7-Y	0Ω	0Ω	60KΩ	70KΩ	22KΩ	1.5Ω	.2Ω	1.3 Meg.
3	6BA6	850KC	0Ω	0Ω	.1Ω	60KΩ	95KΩ	70Ω	-
4	6BA6	1 Meg.	0Ω	0Ω	.1Ω	60KΩ	95KΩ	70Ω	-
‡ 5	6AL5	INF.	INF.	0Ω	.1Ω	0Ω	0Ω	20KΩ	-
6	6SQ7	0Ω	10 Meg.	0Ω	540KΩ	540KΩ	500KΩ	.1Ω	0Ω
7	6SJ7	0Ω	0Ω	1.5KΩ	5 Meg.	1.5KΩ	2.2 Meg.	.1Ω	280KΩ
8	6V6GT	0Ω	0Ω	60KΩ	60KΩ	500KΩ	5 Meg.	.1Ω	0Ω
9	5Y3GT	INF.	60KΩ	72KΩ	210Ω	60KΩ	215Ω	INF.	60KΩ

‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION. §TAKEN WITH VACUUM TUBE VOLTMETER.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



DISASSEMBLY INSTRUCTIONS

1. Remove four push-on type control knobs.
2. Remove loop antenna plug from chassis.
3. Remove phono-pickup plug from chassis.
4. Remove speaker plug from chassis.
5. Remove FM antenna lead from terminal strip on chassis.
6. Remove loop primary lead from terminal strip on chassis.
7. Disconnect phono-motor plug.
8. Remove loop antenna from chassis.
9. Remove four hex nuts holding speaker in cabinet. Remove speaker from cabinet.
10. Remove one Phillips head screw and remove pilot light from cabinet.
11. Remove four hex head screws holding chassis in cabinet. Remove chassis from cabinet.

PUSHBUTTON ADJUSTMENTS

The ranges of the pushbuttons reading from left to right are as follows: 540-1000KC, 650-1300KC, 650-1300KC, 975-1600KC, 975-1600KC.

1. Turn receiver on and allow it to warm up for at least 15 minutes. Turn band switch to push-button position. (fully counter-clockwise).
2. Make a list of stations desired to be set up ranging from low frequency to high frequency stations making certain that each one falls within the range of the pushbutton to be set up.
3. Push first button from left (from front of chassis) in completely.
4. Adjust B1 to tune in desired station. Adjust B2 for maximum volume.
5. To set up the remaining buttons follow the same procedure outlined above adjusting B3, B5, B7 and B9 to tune in desired stations and B4, B6, B8 and B10 for maximum volume. Repeat adjustments for greater accuracy.

ALTERNATE FM ALIGNMENT INSTRUCTIONS

FM ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Before performing Step 14 connect two 68KΩ resistors (within 1% of each other) in series from pin #7 of the 6AL5 tube to chassis. The common VTVM lead is connected to the junction of these resistors.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
13	.01 MFD.	High side to Pin #1 of 6BA6 2nd IF Tube #4. Low side to chassis near same tube.	10.7MC (400~ mod.)	FM (clock-wise)	Any position where interfering signal is not received.	DC probe to Pin #7 of 6AL5. Common lead to chassis.	A12	Set VTVM to a low DC range. Adjust A12 for maximum reading (negative).
14	.01 MFD.	"	"	"	"	DC probe to junction of resistor #78 and cap. #91. Common to two 68KΩ resistors. (see pre-alignment instructions.)	A13	Set meter for lowest DC range. As A13 is rotated a point will be found where VTVM will swing sharply from a positive to a negative reading. Adjust A13 for zero voltage as A13 is moved through this point. Exercise extreme care in this adjustment. Remove the two 68KΩ resistors.
15	.01 MFD.	High side to Pin #1 of 6BA6 1st IF Tube #3. Low side to chassis near same tube.	"	"	"	DC probe to Pin #7 of 6AL5. Common to chassis.	A14,A15	Adjust for maximum meter reading.
16	.01 MFD.	High side to junction of A19 and FM RF Coil. Low side to chassis near tuner unit.	"	"	"	"	A16,A17	"

If position of FM tuner slugs have been disturbed or if coil or slug has been replaced omit Steps 17-19 inclusive and proceed with Step 20. If not, proceed with Step 17.

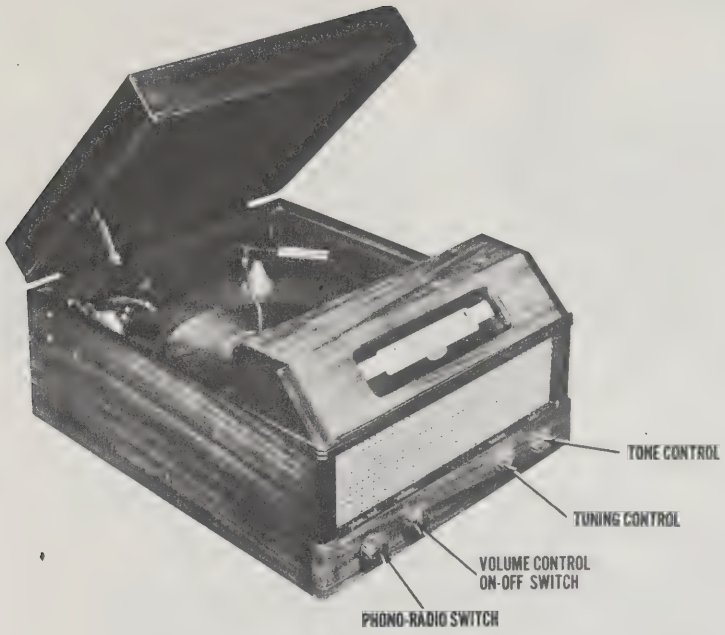
17	120Ω & 150Ω carbon res.	High side to "A" terminal at rear of chassis in series with 120Ω. Low side to other other "A" terminal in series with 150Ω.	98MC (400~ mod.)	FM (clock-wise)	98MC	DC probe to Pin 7 of 6AL5. Common to chassis.	A18	Adjust to receive 98MC signal and adjust for maximum reading.
18	"	"	"	"	"	"	A19	Adjust for maximum reading. Recheck A16 & A17 for maximum reading.
19	"	"	90MC (400~ mod.)	"	Tune for maximum reading.	"	A20	Adjust for maximum reading. Check calibration at 88MC and 108MC. If within .4MC alignment is satisfactory. If greater than .4MC perform Steps 20, 21 and 22.

FM SLUG TUNER ADJUSTMENT

This procedure is to be used only where the positions of slugs in the slug tuner have been disturbed or in event of a coil or slug replacement, or where a serious calibration or tracking error is noted after attempting to align the receiver as described in the preceding section.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
20	120Ω & 150Ω carbon res.	High side to "A" terminal at rear of chassis in series with 120Ω. Low side to other "A" terminal in series with 150Ω	88MC (400~ mod.)	FM (clock-wise)	88MC	DC probe to Pin #7 of 6AL5. Common to chassis.	A18,A19 A20	Adjust A18 to receive 88MC signal. Adjust A19 & A20 for maximum reading.
21	"	"	98MC (400~ mod.)	"	98MC	"	A21	Adjust to receive 98MC signal and adjust for maximum reading.
22	"	"	108MC (400~ mod.)	"	108MC	"	A22	Adjust position of heavy braided lead connection to osc. coil for maximum reading. Coat lead with speaker cement. Adjust A22 for maximum reading. Repeat Steps 20, 21 and 22 until satisfactory calibration and tracking at 88, 98 and 108MC is obtained. Apply speaker cement to top of each FM tuning slug.

TEMPLE
MODEL G-518



TEMPLE MODEL G-518

TRADE NAME	Temple, Model G-518
MANUFACTURER	Templetone Radio Mfg. Corp., Garfield Ave., New London, Conn.
TYPE SET	AC Operated Combination Phono-Radio Superheterodyne Receiver-Self Contained Loop Ant.
TUBES (FIVE)	Types, 12SA7GT Converter, 12SK7GT IF Amp., 12SQ7GT Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	110-120 Volts AC
TUNING RANGE—BROADCAST	532-1700KC RATING .230 Amps. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not, connect a .1 MFD capacitor in series with low side of signal generator and chassis. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.01 MFD.	High side to rear stator of tuning cap. Low side to chassis.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used, reduce dummy ant. to .001 MFD. to reduce hum modulation.
2		Loop	1700KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3		"	1550KC	Tune for maximum output.	"	A6	Adjust for maximum output.

DISASSEMBLY INSTRUCTIONS

1. Remove two screws from bottom of cabinet holding record changer in cabinet.
2. Remove phono-pickup plug from chassis.
3. Remove phono-motor plug from chassis.
4. Remove record changer from cabinet.
5. Remove four push-on type control knobs.
6. Remove two Phillips head wood screws holding panel in back of chassis. Remove panel from cabinet.
7. Remove three screws holding chassis in cabinet. Remove staples holding loop in cabinet. Remove chassis and loop from cabinet.

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DATE 12/47 SET #29 FOLDER #4719-27

PARTS LIST AND DESCRIPTIONS

TEMPLE MODEL G-518

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: TEMPLE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter		12SA7GT	8AD	
2	IF Amp.		12SK7GT	8N	
3	Det.-AVC-AF		12SQ7GT	8Q	
4	Power Output		50L6GT	7AC	
5	Rectifier		35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TEMPLE PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	80	150		FP357*	DY-804020-150	TEL-340*	AF88D4*		■ Filter
B	40	150					PRS-150-40	UP84215	▲ "
C	20	150		TC26		UT-201			Output Cathode Bypass
7	.01	600		TP410	S-6-01	TC-11	684-01	DT6S1	Output Plate Bypass
8	.005	600		TP408	S-6-005	TC-25	684-005	DT6D5	Audio Coupling
9	.005	600		TP408	S-6-005	TC-25	684-005	DT6D5	Tone Compensation
10	.003	600		TP406	S-6-003	TC-23	684-003	DT6D3	" "
11	.005	600		TP408	S-6-005	TC-25	684-005	DT6D5	Audio Coupling
12	.1	400		TP428	S-4-1	TC-1	484-.1	DT4P1	AVC Filter
13	.05	400		TP426	S-4-05	TC-15	484-05	DT4S5	IF Cathode Bypass
14	.01	600		TP410	S-6-01	TC-11	684-01	DT6S1	RF Bypass Power Supply
15	.1	400		TP428	S-4-1	TC-1	484-.1	DT4P1	Phono Isolation
16	.1	600		TP418	MPH-6-1	TC-1	684-.1	DT6P1	Line Filter
17	.01	600		TP410	S-6-01	TC-11	684-01	DT6S1	Ext. Ant. Isolation
18	100	500		MC235	MO.5-31	1FM-35	1468-0001	5W5T1	AF Plate Bypass
19	100	500		MC235	MO.5-31	1FM-35	1468-0001	5W5T1	Osc. Grid Cap.
20	10	500		MC215	MO.5-41	MS-41	1468-00001	5W5Q1	Fixed Trimmer-See Note1

*Parallel sections to obtain desired capacity.
Note 1-Not used in all models.

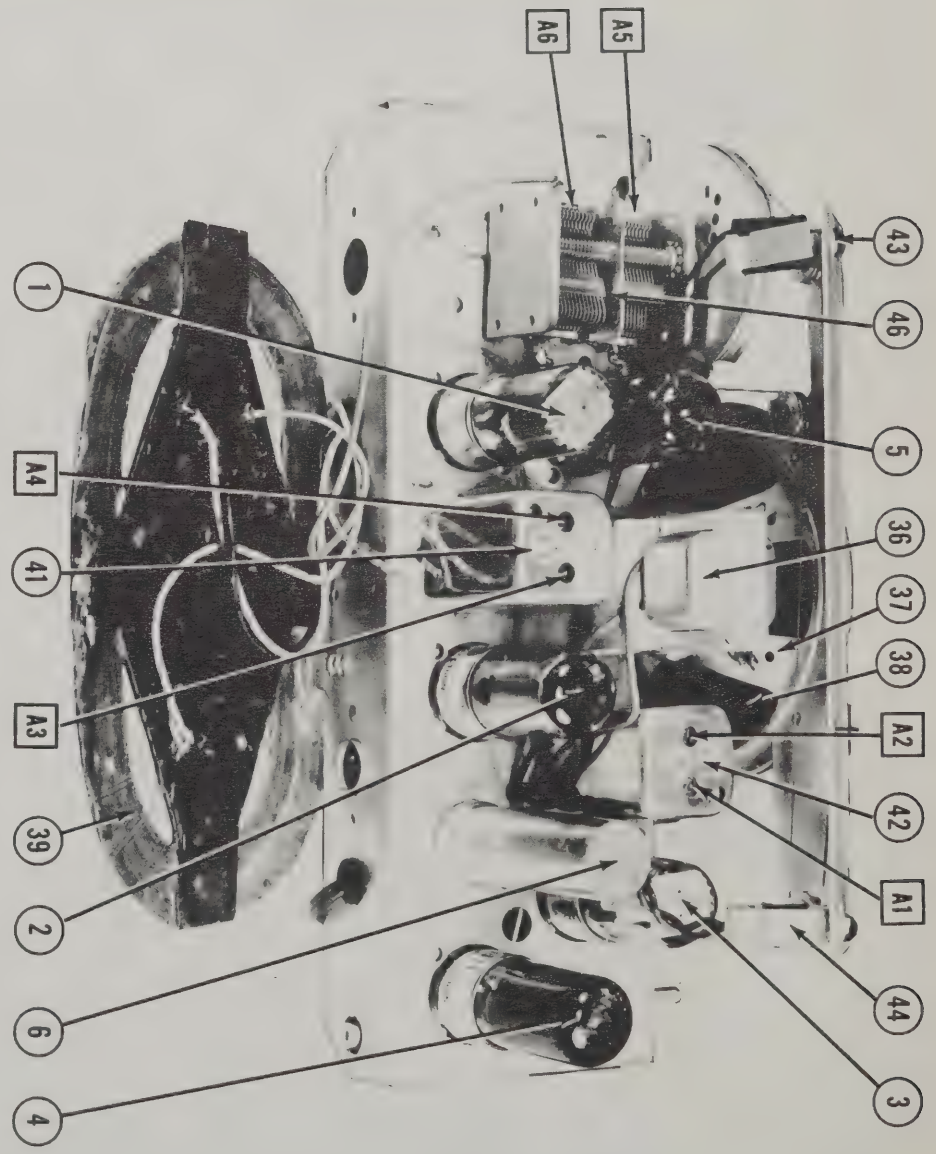
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TEMPLE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
21A	500KΩ	½	RP5-2A	TM230	D13-133X	AT-92	Volume Control & Sw.
B	Shaft		Not Req.	SS25	E	KSS-3	Attach to 21A per instructions
C	Switch		" "	M26	41	SW-A	" " " "
22A	500KΩ	½	RP6-504B	MK401	D13-133	AM-60-Z	Tone Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 22A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TEMPLE PART No.	IRC PART No.	IDENTIFICATION CODES
23	22KΩ	½		BTS-22K	Red-Red-Or. Oscillator Grid
24	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. AVC Network
25	3.9 Meg.	½		BTS-3.9 Meg.	Or.-White-Grn. AF Grid
26	33KΩ	½		BTS-33KΩ	Or.-Or.-Or. Tone Compensation
27	330KΩ	½		BTS-330K	Or.-Or.-Yl. AF Plate Load
28	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Output Grid
29	47Ω	½		BW-½-47	Yl.-Vi.-Blk. Output Cathode
30	100Ω	½		BW-½-100	Br.-Blk.-Br. Output Cathode
31	1000Ω	1		BTA-1000	Br.-Blk.-Red Filter
32	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Phono Shunt
33	820KΩ	½		BTS-820K	Gray- Red-Yl. Series Phono
34	100Ω	½		BW-½-100	Br.-Blk.-Br. Surge Limiter
35	150Ω	½		BW-½-150	Br.-Grn.-Br. Pilot Light Shunt

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		TEMPLE PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
36	2100Ω	3.3Ω	150Ω	.55Ω	Part of EH-19	A-3876†	T22S45†	A-2928†	†Bend mounting tabs down, file out slots and mount on original bracket.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			TEMPLE PART No.	JENSEN PART No.		
37	FIELD PM	VC IMP. 3.3Ω	EH-19	ST-105 Mod. P5-X		
38	CONE DIA. 4-3/4"	VC DIA. 1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

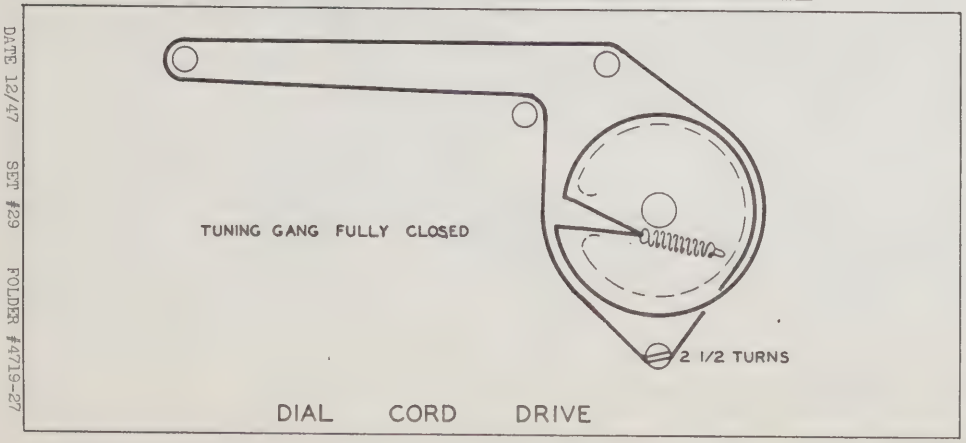
ITEM No.	USE	DC RES.		REPLACEMENT DATA	
		PRI.	SEC.	TEMPLE PART No.	MEISSNER PART No.
39	Loop Ant.	.2Ω	1.5Ω	LL7	
40	Osc. Coil		6.8Ω	LO2	14-1040
41	Input IF	16Ω	16Ω	TM2-10	16-6658
42	Output IF	16Ω		TM2-11	16-6670

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					TEMPLE PART No.		
43	Bayonet	2.9	.17	White			Type 291
44	"	"	"	"			"

MISCELLANEOUS

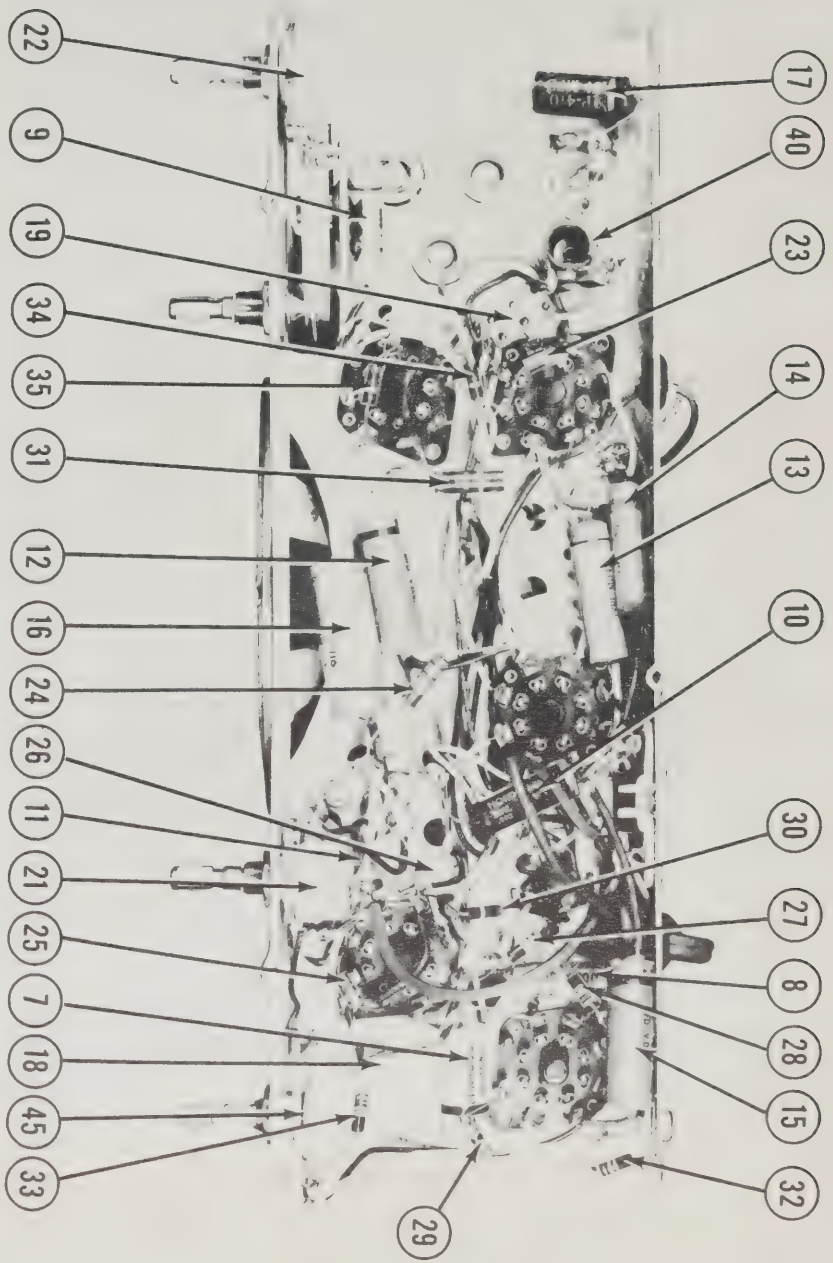
ITEM No.	PART NAME	TEMPLE PART No.	NOTES
45	Switch	SR13	Radio-Phono
46	2 Gang Var. Cap.	CV6	(23-440MMF, 20-186MMF)



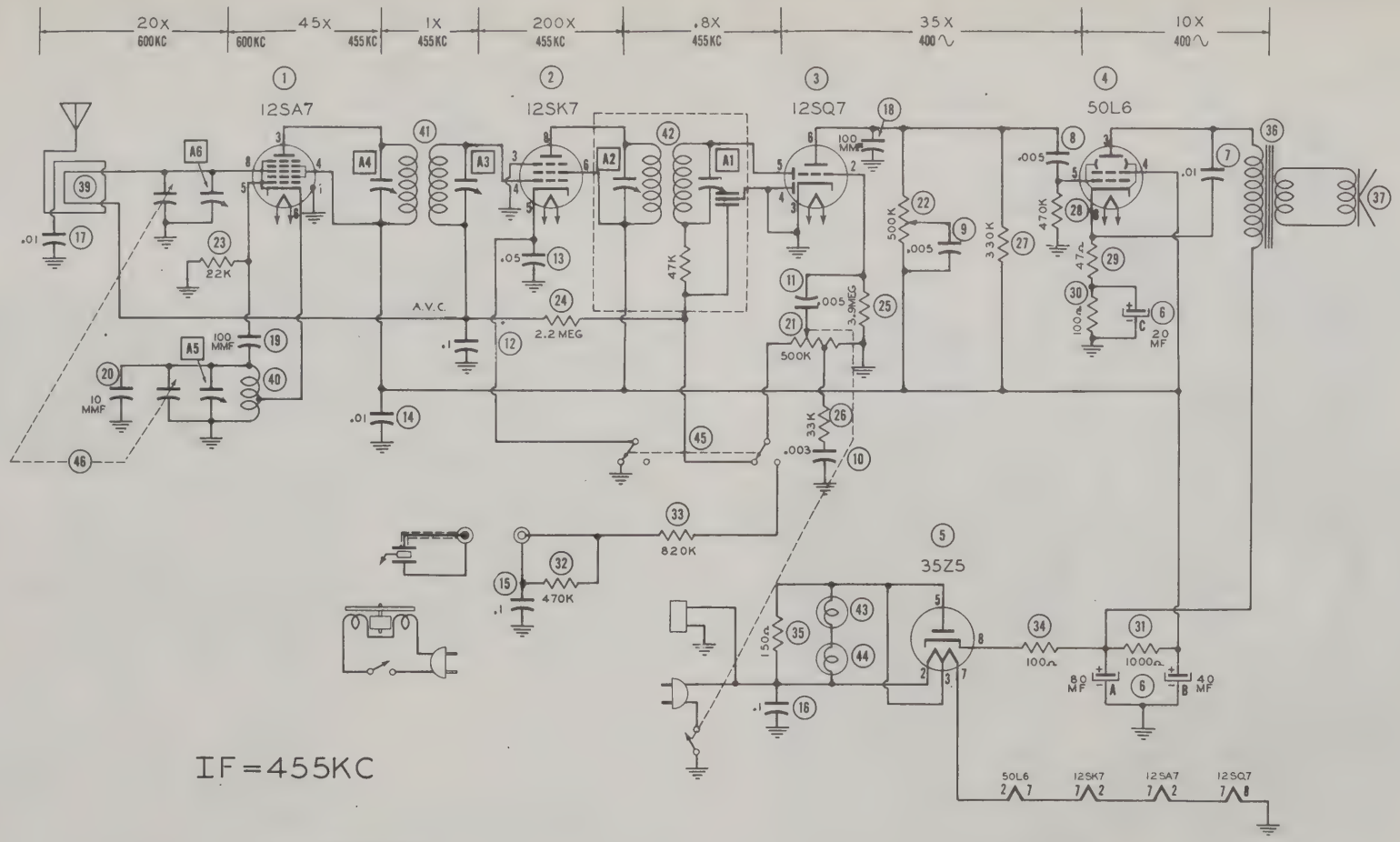
DATE 12/47 SET #29 FOLDER #4719-27

TEMPLE MODEL G-518

CHASSIS—BOTTOM VIEW



TEMPLE MODEL G-518



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7GT	0V.	12VAC	75VDC	75VDC	-7.6VDC§	0V.	25VAC	-.6VDC
2	12SK7GT	0V.	25VAC	-.6VDC	-.6VDC	0V.	75VDC	38VAC	75VDC
3	12SQ7GT	0V.	-1VDC	0V.	0V.	-.5VDC	55VDC	12VAC	0V.
4	50L6GT	3VDC	85VAC	90VDC	75VDC	0V.	0V.	38VAC	4.4VDC
5	35Z5GT	100VDC	117VAC	113VAC	75VDC	113VAC	100VDC	85VAC	105VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7GT	0Ω	13Ω	30KΩ	30KΩ	22KΩ	.7Ω	27Ω	3 Meg.
2	12SK7GT	0Ω	27Ω	3 Meg.	3 Meg.	0Ω	30KΩ	40Ω	30KΩ
3	12SQ7GT	0Ω	4 Meg.	0Ω	0Ω	560KΩ	360KΩ	13Ω	0Ω
4	50L6GT	100Ω	90Ω	30KΩ	30KΩ	500KΩ	INF.	40Ω	140Ω
5	35Z5GT	30KΩ	120Ω	115Ω	30KΩ	115Ω	30KΩ	90Ω	30KΩ

§TAKEN WITH VACUUM TUBE VOLTMETER.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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4719-27

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. **DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.**
2. **Socket connections are shown as bottom views.**
3. **Measured values are from socket pin to common negative.**
4. **Line voltage maintained at 117 volts for voltage readings.**
5. **Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.**
6. **Volume control at maximum, no signal applied for voltage measurements.**

TOP VIEW

GENERAL INFORMATION

This changer is designed to play up to ten 12-inch, twelve 10-inch, or an intermixed stack of 10- and 12-inch records not exceeding 1⅛ inches in total thickness. No setting for record size is necessary and the changer is automatically turned off after the last record is played. The idler wheel is automatically retracted when the changer is not operating.

Manufactured by WEBSTER-CHICAGO, 5610 Bloomingdale Ave., Chicago 39, Illinois

TO REPLACE NEEDLE

The crystal pickup cartridge supplied with this changer is the Astatic Nylon 1-J. An ejector screw hole is provided in the cartridge housing immediately above the needle. Any type screw with a No. 2-64 thread may be used to eject the needle. The new needle is then inserted in the tapered groove of the chuck, pushing carefully until the needle pin locks in place.

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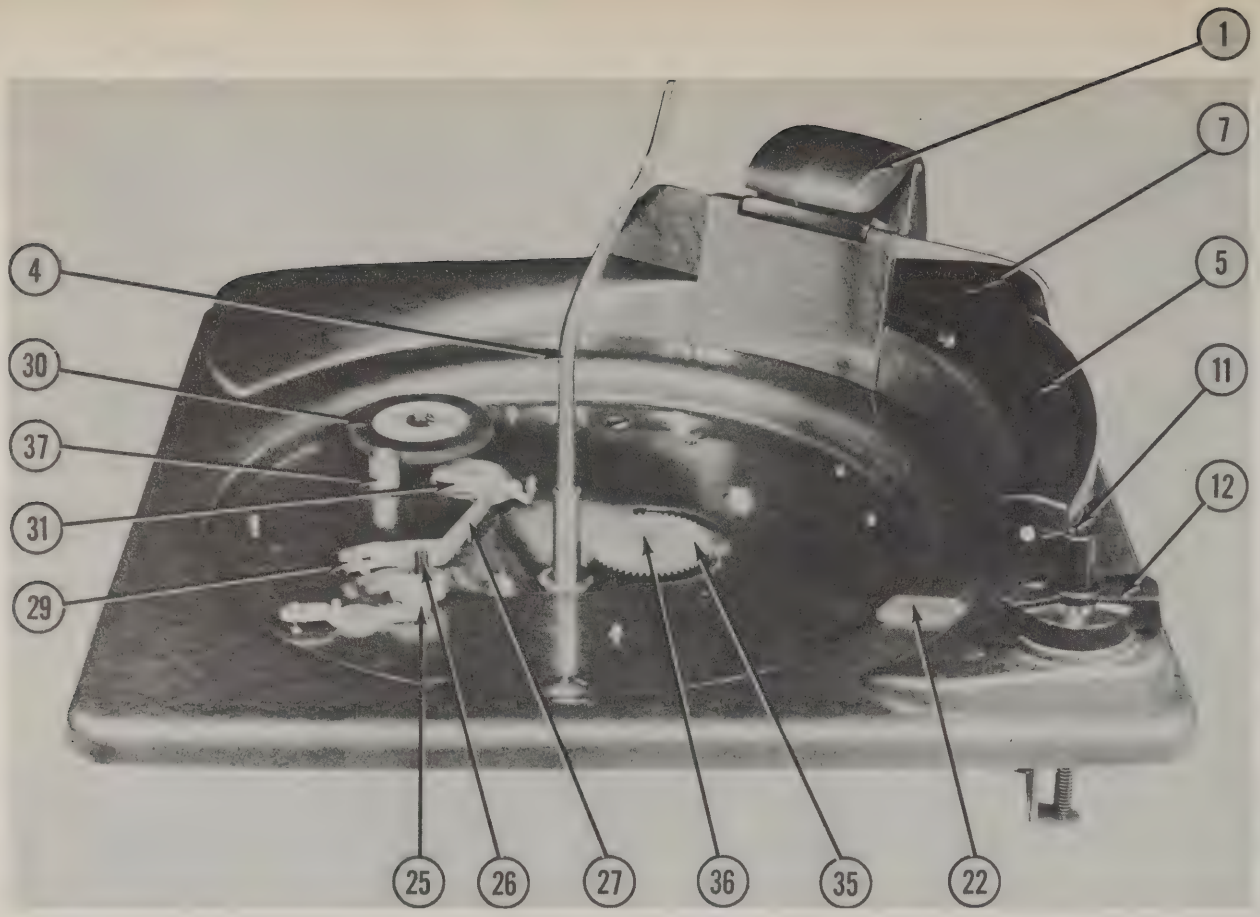
DATE 12/47 SET #29 FOLDER 4719 - 28

WEBSTER
MODEL 70

WEBSTER
MODEL 70



TOP VIEW LESS TURNTABLE

THE CHANGE CYCLE

The change cycle is started by a velocity trip mechanism. When the movement of the pickup arm toward the record spindle is greater than ⅛ inch in ½ revolution of the turntable the mechanism is actuated.

As the pickup arm moves toward the center of the record, it moves the automatic trip lever (61) with it, the lever being connected through a spring-loaded clutch to the pickup arm pivot shaft (21).

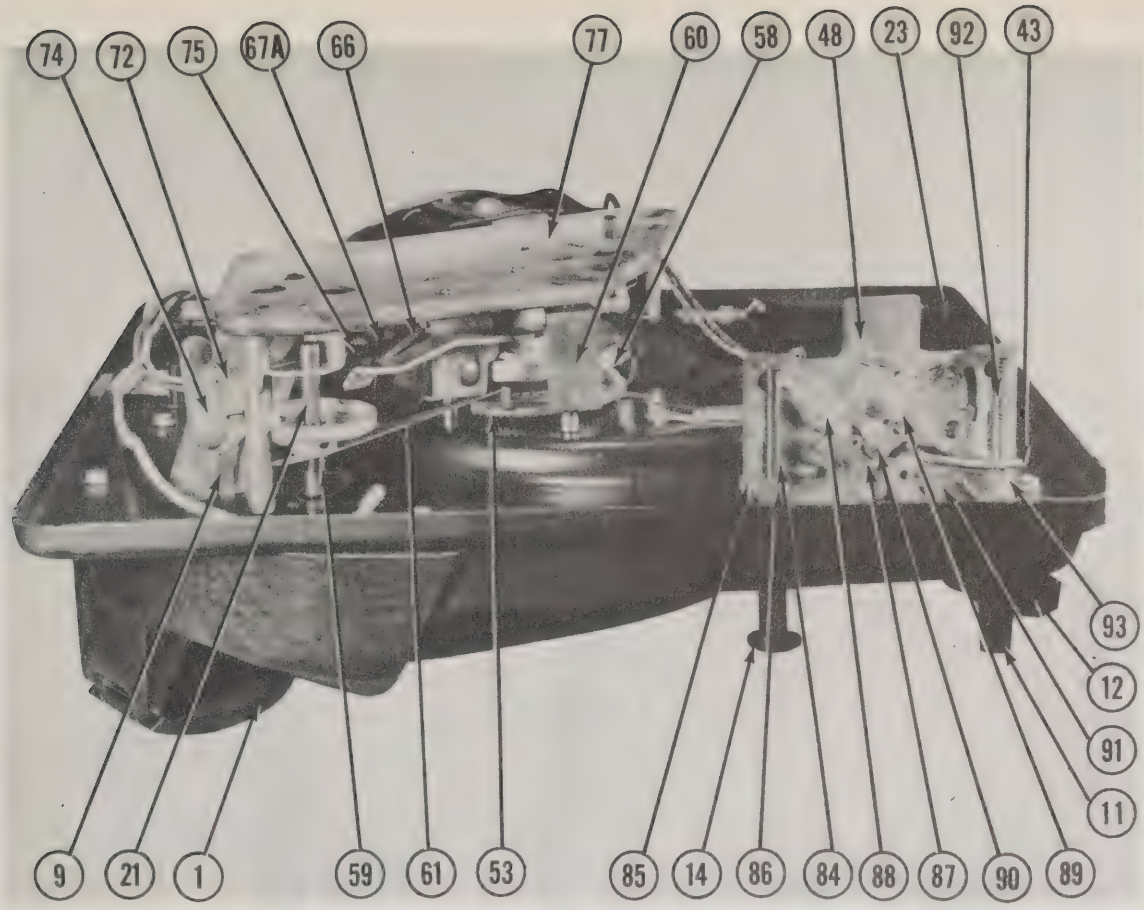
The trip lever (61) gradually approaches the velocity trip lever (60) and, upon contact, carries it with it. However, the main cam actuating gear (45) has four equally spaced projections on its circumference which strike the velocity trip lever roller (62), as the gear revolves, and force the automatic trip lever (61) and the velocity trip lever (60) back away from the tripping point. This does not affect the pickup arm because of the friction clutch. When the needle enters the eccentric groove upon completion of the record, the automatic trip lever moves at such a speed that it carries the velocity trip lever to the tripping point between projections on the main gear.

The velocity trip lever (60), when in position between cycles, holds the actuating pawl (57) on the upper surface of the main cam (58) away from the track on the lower surface of the main actuating gear (53). When tripped, the velocity trip lever no longer holds the pawl, but allows it to engage the gear and causes the cam to rotate with the gear.

The main cam has two cam surfaces on its lower side. The inside cam surface forms a track in which the stud of the pickup arm raising lever (65) rides. The outer cam surface actuates the rocker arm assembly (67) by means of the rocker arm roller (68).

As it is rotated by the cam, the pickup arm raising lever (65) pushes up on the pickup arm raising disc (63). The stud of the raising arm is now moved toward the center of the cam, moving the pickup out clear of the record stack. As the cam continues to rotate, the roller (68) of the rocker arm moves down the incline moving the record selector shelf assembly (9) toward the spindle to drop a record.

The stud on the raising lever now moves back away from the center of the cam, moving the pick-up to the set-down position. This position is determined by the position of the raising arm (65) stud in its cam groove. When a 10-inch record rests on the record shelf, in position to be the next record



REAR VIEW BOTTOM

dropped, the record selector lever (9A) hangs in its normal position. This allows its lower end to engage the index selector assembly (74). Then, when the rocker arm assembly (67) moves to drop a record, the index assembly (74) forces the raising arm stud to the side of its cam groove nearest the center of the cam. When a 12-inch record is on the record shelf in position to drop, the record selector lever (9A) is placed out of position so that it does not engage the index assembly. This allows the raising lever stud to remain at the outer side of its cam groove.

The stud now moves up an incline, allowing the pickup to come down on the record. At the same time, the roller on the rocker arm moves back up its incline, allowing the record shelf assembly (9) to move back to its normal position.

During the rotation of the cam, the velocity trip lever has been reset by the projections on the main gear. Therefore, when the cam has completed one revolution the hook on the velocity trip lever catches the pawl and disengages the main cam from the actuating gear, completing the cycle.

If no record is resting on the spindle step at the beginning of a change cycle, the automatic shut-off lock (69) will engage the pickup raising disc and prevent the pickup from moving in to the set-down position. It, therefore, sets down on the "off" button, shutting the changer off.

ADJUSTMENTS

Pickup Arm Height:

The needle should clear the top record of a full stack by approximately ⅛ inch. Adjustment may be made by bending the pickup raising lever (65) at the bend just below the point of contact with the pickup raising disc. Do not attempt to adjust by moving the raising disc.

Set-Down Adjustment:

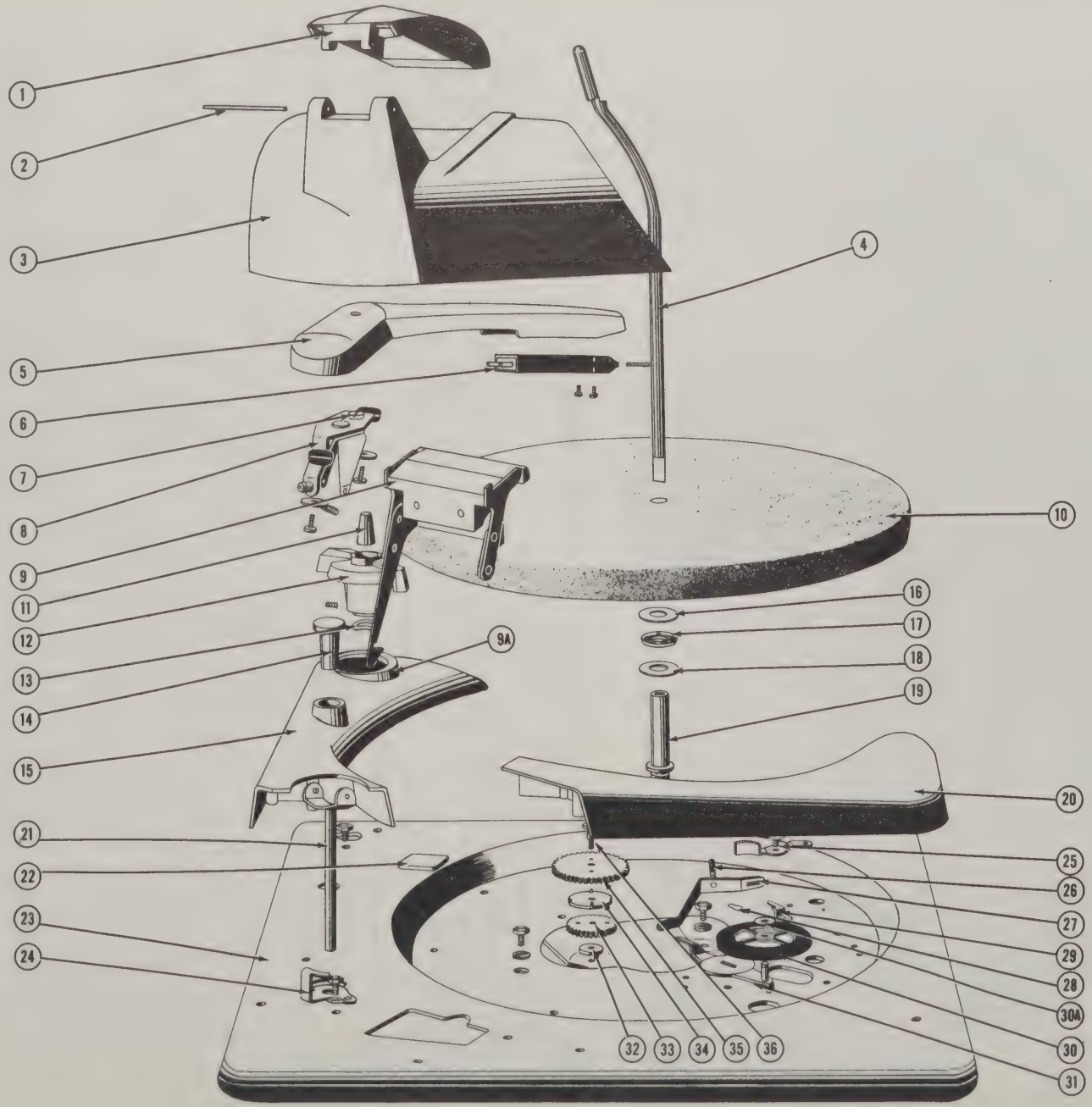
Normally, the set-down point may be adjusted by turning the eccentric pin (7) in the hinge (8). This pin may be turned with a screwdriver through a hole in the top of the pickup arm. If this pin does not move the arm far enough, loosen the set screws in the pickup arm raising disc (63) and turn the disc until the adjustment is correct.

Automatic Trip Friction Clutch:

The spring clip (50), which adjusts the tension of the clutch spring, should be at least ¼ inch below the main base plate. A collar held by a set screw is frequently used instead of this clip. The spring tension should be just enough to operate the trip mechanism. Too much tension will cause undue drag on the pickup arm. No oil or grease should be used on this clutch.

Velocity Trip and Roller Assembly:

The hook which disengages the main cam actuating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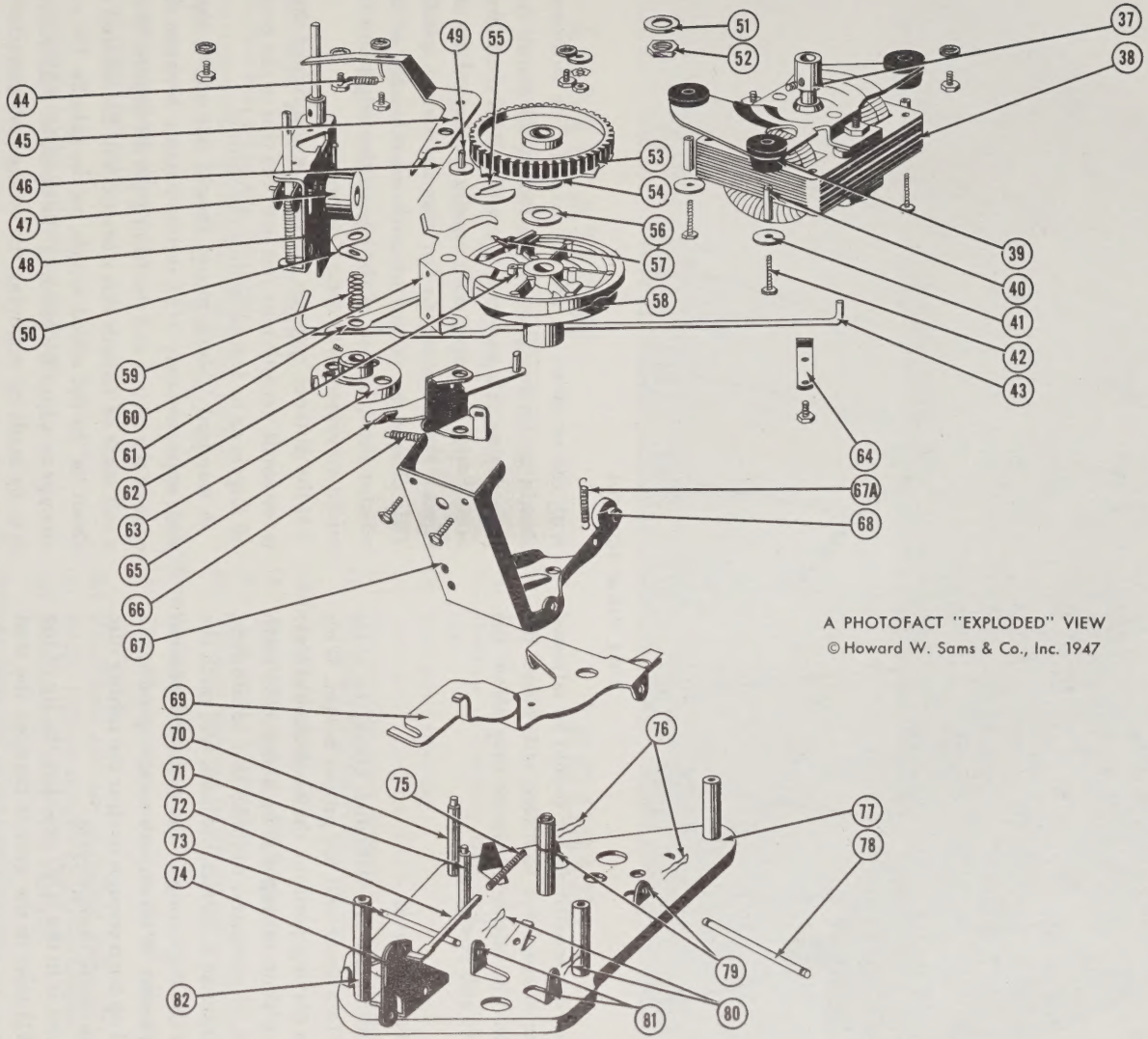

A PHOTOFACT "EXPLODED" VIEW

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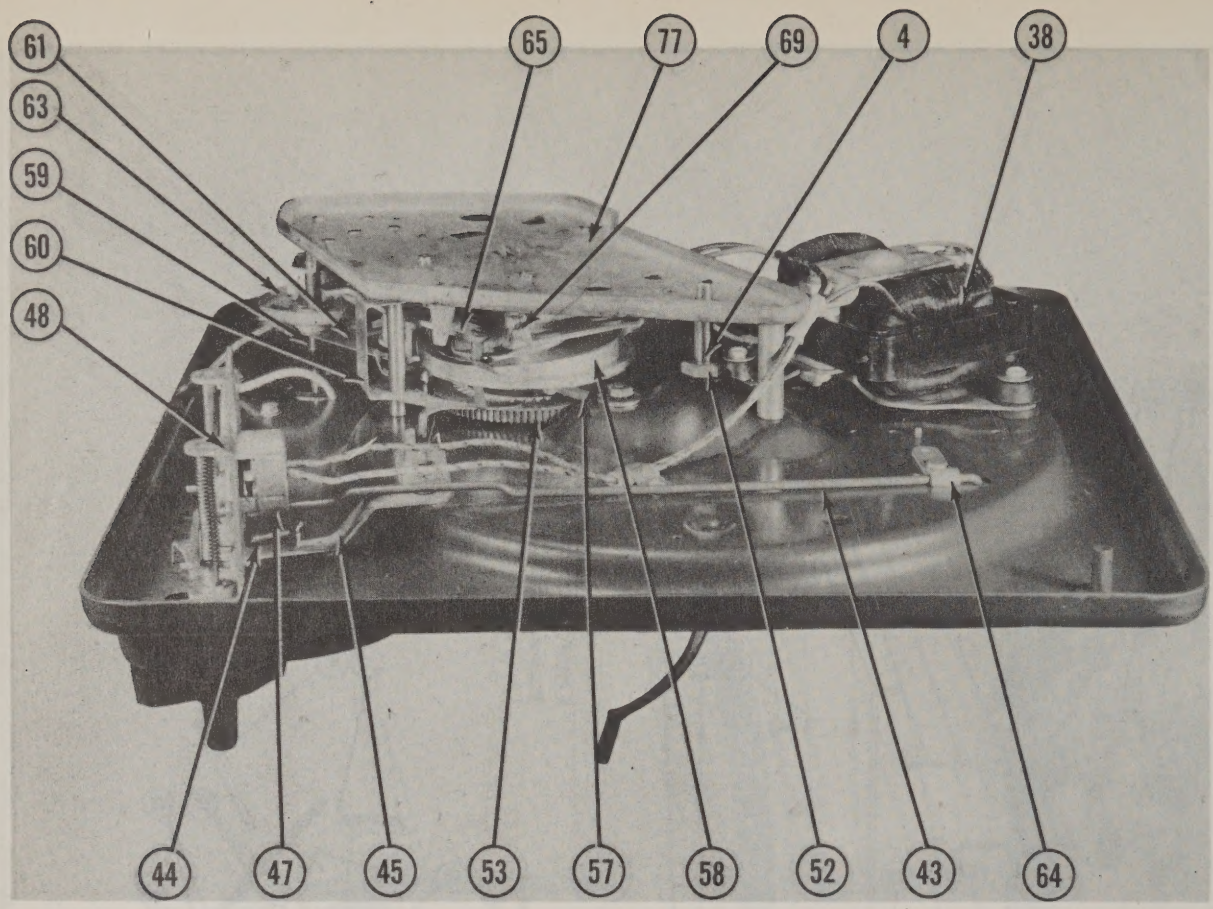


SIDE VIEW BOTTOM

pawl (57) from the actuating gear should be adjusted for a clearance of from five to fifteen mils below the actuating gear. Too much clearance may allow the pawl to bounce and re-engage.

Automatic Shut-Off Lock:

With no records on the turntable, check the automatic shut-off lock lever (69) for proper height. With the changer in playing position, the hook should clear the top of the pickup raising disc by about 1/32 inch. Bend the hook, if necessary, to make this adjustment. When the adjustment is correct, the hook will catch the raising disc at the beginning of the cycle and prevent its lateral movement. With records on the spindle, the hook is moved up high enough to clear the raising disc throughout the entire change cycle.

When the arm is in the "Off" position, the lip of the raising disc (63) rests in the groove between the stud post and bracket. If the arm does not rest properly on the "Off" button, its position may be corrected by bending the lip of the raising disc. After making this adjustment, check the set-down on a 12-inch record to be certain the lip of the disc does not strike the bracket.

Record Selector Shelf:

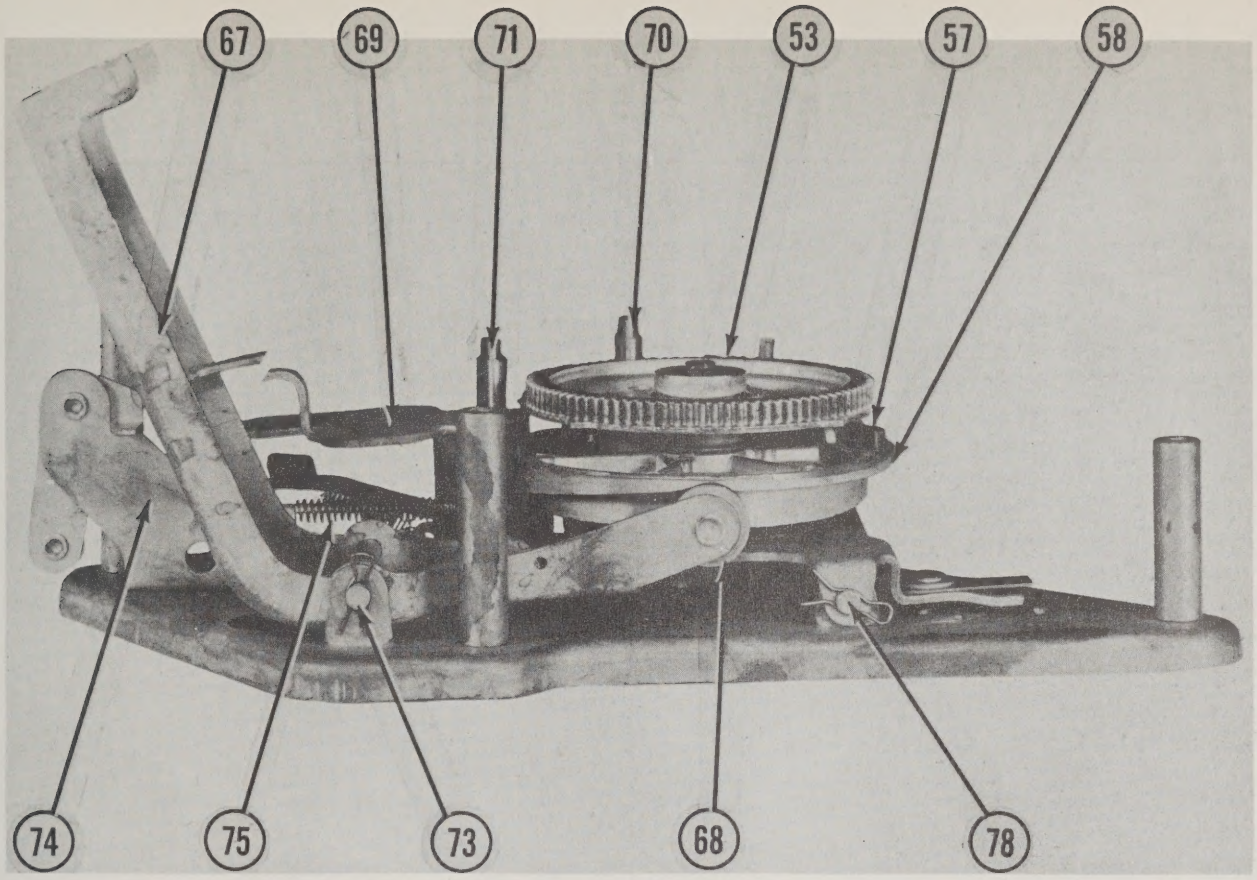
At the beginning of the change cycle, the record selector shelf (9) moves about 3/32 inches toward the spindle. The purpose of this movement is to lock the automatic shut-off lever (69) so it will not interfere with the set-down on the last record. The movement should not be enough to drop a record. If a record does drop during this movement, it will fall on the pickup arm. Early dropping will usually be caused by the selector shelf resting too far from the record spindle. This allows the record to catch on the edge of the selector shelf, instead of sliding on the ledge, and the initial movement will drop a record.

If the distance between the spindle and record shelf is too small, records may rest over the tips of the push-off fingers or be forced against the spindle.

A standard 10-inch record should rest on the shelf with approximately 5/32 inches distance between the edge of the record and the front push-off fingers. With a full stack of records this distance will be reduced to about ⅛" by the added weight on the spindle. Do not attempt to adjust by bending the spindle. Adjustment is to be made by removing the center trim escutcheon (3) and bending the rocker arm (67). For forward adjustment (to reduce distance), wedge a screwdriver between the rocker arm and the subplate (77) in front of the rocker arm pivot and bend the rocker arm toward the spindle with the heel of the hand.

For backward adjustment (to increase distance), wedge a screwdriver between the rocker arm and the subplate (77) back of the rocker arm pivot. Pull back on the selector post.

If adjustment is made, be certain that both push-off fingers are equi-distant from the edge of the record.



SIDE VIEW OF SUB PLATE ASSEMBLY

LUBRICATION

Lubrication should be sufficient for about a year of normal operation. When lubricating, be very careful not to allow oil or grease to come in contact with any rubber surfaces or the automatic trip clutch. If any oil gets on any of these surfaces, it should be removed immediately with carbon tetrachloride.

1. ***Use No. 10 oil at the following points:***
   - (a) Saturate felts on motor bearings.
   - (b) One drop each—bottom bearing point, hole in bracket, and hole in main base plate for pickup arm shaft.
   - (c) Ball bearing assembly (17).
   - (d) Idler wheel felt (30A).

2. ***Use Lubriplate at the following points:***
   - (a) Idler wheel linkage.
   - (b) Turntable shaft stud (19).
   - (c) Pickup arm hinge pins (part of 21).
   - (d) Knife edge of raising lever (65).
   - (e) Main cam bearing. Remove sub-plate assembly to gain access to this bearing.

3. ***Apply Sta-Put to the following surfaces:***
   - (a) Teeth of main cam actuating gear (53).
   - (b) Track of main cam (58).
   - (c) Teeth of fibre gears (33, 35).
   - (d) Raising lever bracket bearing surfaces (65).

TROUBLES

1. ***Failure to Trip:***
   - (a) Insufficient tension on clutch spring (59).
   - (b) Binding in velocity trip and roller assembly (60).
   - (c) Cam pawl binding.
   - (d) Automatic trip arm (61) bent.
   - (e) Manual trip lever assembly (45) binding.
   - (f) No eccentric groove on record.

2. ***Failure of Manual Trip:***
   - (a) Actuating spring (46) broken.
   - (b) Cam pawl (57) binding.
   - (c) Velocity trip and roller assembly (60) binding.

3. ***Continuous Tripping:***
   - (a) Too much clearance on hook of velocity trip lever (60).
   - (b) Hook bent and not engaging pawl (57).
   - (c) Roller (62) on velocity trip lever broken.
   - (d) Manual trip lever (45) binding.

4. ***Fails to Shut Off After Last Record:***
   - (a) Spindle binding.
   - (b) Hook on automatic shut-off lever (69) fails to engage raising disc (63).

5. ***Motor Fails to Shut Off:***
   - (a) "Off" button stuck.
   - (b) Defective switch mechanism (48).
   - (c) Defective switch (83).

The manufacturer recommends that either the switch or switch mechanism be replaced as a unit and that repair not be attempted.

PARTS LIST

Ref. No.	Part No.	DESCRIPTION	Ref. No.	Part No.	DESCRIPTION
1	42P159	Record clip	47	32P033	AC switch cover
2	27P074	Record clip pin	48	11X134	Switch assembly
3	11G169	Center trim escutcheon	49	27P102	Trip lever shoulder rivet
4	42P163	Record spindle	50		Clutch spring tension clip
5	49X041	Pickup arm	51		Turntable stud lockwasher
6		Crystal pickup cartridge	52	26P687	Turntable stud nut
7	(Part of 8)	Pickup arm set-down adjusting pin	53	11X032	Main cam actuating gear
8	21X251	Pickup arm mounting hinge assembly	54		Cam spacing thrust washer
9	49P044	Record selector and shelf assembly	55	25P342	Cam spacing "C" washer
9A	(Part of 9)	Record selector lever	56		Cam spacing thrust washer
10	11X138-1C	Turntable	57	(Part of 58)	Main cam actuating pawl
11	49P026	"On" button	58	11X033	Main cam assembly
12	49P040	Manual control knob	59	46P127	Clutch tension spring
13	25P182	Manual control knob spring washer	60	11X047	Velocity trip lever
14	49P025	"Off" button	61	45P345	Automatic trip lever
15		Control escutcheon	62	(Part of 60)	Velocity trip roller
16	25P269	Bearing race washer	63	11X031	Pickup arm raising disc assembly
17	11X058	Bearing retainer assembly	64	45P452	Idler release rod bracket
18	25P269	Bearing race washer	65	11X097	Pickup arm raising lever and bracket
19	41P414	Turntable shaft stud	66	46P044	Raising lever tension spring
20		Left trim escutcheon	67	11X096	Rocker arm assembly
21	11X136	Pickup arm pivot shaft	67A	46P122	Rocker arm return spring
22		Needle pad	68	(Part of 67)	Rocker arm roller
23		Main base plate	69	11X079	Automatic shut-off lock lever
24		Pickup arm lift stop bracket	70	(Part of 77)	Velocity trip lever stud
25	45P447	Idler release lever	71	(Part of 77)	Raising lever bracket stud
26	(Part of 27)	Connecting link spring	72	(Part of 74)	Index selector arm
27	11X152	Connecting link	73	41P421	Rocker arm pivot pin
28	50P125	Idler retaining clip	74	11X104	Index selector assembly
29	45P453	Connecting link bracket	75	46P011	Index compression spring
30	11X003	Idler wheel	76		Shut-off lock pivot pin retaining clip
30A		Idler wheel felt	77		Sub-plate assembly
31	11X075	Idler mounting link	78	41P443	Shut-off lock pivot pin
32		Idler gear spacing washer	79	(Part of 77)	Shut-off lock mounting ears
33	47P023	Small idler gear	80		Rocker arm pivot pin retaining clip
34	45P342	Idler gear coupling	81	(Part of 77)	Rocker arm pivot mounting ears
35	47P023	Large idler gear	82	(Part of 77)	Pickup arm shaft bracket
36	41P333	Idler gear mounting screw	83	32P002	AC power switch
37	17X412-1	Drive sleeve 60 cycle	84	(Part of 48)	"Off" button return spring
	17X412-4	Drive sleeve 50 cycle	85	(Part of 48)	"Off" button latch trip pawl
38	15X084	50-60 cycle 117-volt motor	86	(Part of 48)	"Off" button latch trip pawl pin
39	25P281	Motor mounting grommet	87	(Part of 48)	"On" button actuating lever latch
40	41P530	Motor mounting spacer	88	(Part of 48)	"On" button actuating lever latch spring
41		Motor mounting washer	89	(Part of 48)	"On" button actuating lever
42	26P241	Motor mounting screw	90	(Part of 48)	"On" button actuating lever roller
43	459440	Idler release rod	91	(Part of 48)	Manual trip locking lever
44	46P017	Manual trip tension spring	92	(Part of 48)	"On" button return spring
45	11X063	Manual trip lever assembly	93	(Part of 48)	"On" button coupling pin
46	(Part of 45)	Manual trip actuating spring			